Report on Mission at SOCFINDO

13 - 25 June 1991

P. GENER

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August 1991

PLAN

1. INTRODUCTION

The procedure for this annual technical mission has now been well established: in agreement with those in charge of the SOCFINDO Agriculture Department and the managers of each plantation, a list of blocks representative of the estates as a whole is drawn up. All the blocks are then visited and recommendations are made for the coming tapping year.

The following parameters are taken into account when drawing up recommendations:

- the position of the cut on the tree
- stimulation intensity
- the clone
- the age of the trees
- the previous year's production level
- the general condition of the trees
- any information likely to affect the physiological behaviour of the tree and production.

From 1992 onwards, the results of latex diagnosis will be added to these parameters, with a view to ensuring better adaptation of the tapping system, the importance of which for obtaining optimum production is well known.

Our sincere thanks go to Mr. Tampubolon and Mr. Sitepu for their excellent organization of the mission, and to the estate managers:

Mr. Sahala Sormin (Aek-Pamienke)
Mr. Said Aliun (Halimbe)
Mr. J.P. Sirait (Tanah-Besih)
Mr. H.A.G. Adlin (Tanjung Maria)
Mr. Idris Daud (Lima Puluh)

for their hospitality and cooperation.

2. Estate visits - 1992 tapping system recommendations

2.1. AEK-PAMIENKE

- Area tapped in 1990 : 3,023 ha
- Area being tapped in 1991 : 3,185 ha
- Increase in production per ha 1989/1990 : + 5.9%
- For plantings aged 20 years and over, the number of trees being tapped per hectare varies from 169 to 423. For those aged 10 to 20 years, the number varies from 211 to 487. For plantings under 10 years, the number of trees varies from 204 to 385.
- Unlike the other estates, the low production level in certain blocks is not due on the whole to the number of trees being tapped, but to marshy zones.
- The blocks with abnormally low production (≤ 1,300 kg/ha) are:
  50 - 48 - 22 - 23 - 28 - 33 - 45 - 66 - 12 - 55 - 59 - 14 - 56 - 57 - 58 - 60 - 63 - 12 - 14 - 61 - 63 - 68 - 60 - 47 - 80 - 82 - 4
- The blocks with satisfactory to good production (≥ 1,500 kg/ha) are:
  51 - 45 - 24 - 25 - 29 - 30 - 31 - 35 - 65 - 67 - 68 - 69 - 70 - 71 - 72 - 15 - 17 - 20 - 21 - 26 - 27 - 38 - 39 - 40 - 41 - 74 - 75 - 76 - 77 - 32 - 13 - 11 - 14 - 58 - 62 - 64A 64B - 65 - 78 - 79 - 81.
- The tapping system recommendations for 1992 are given in the following tables and diagrams.

AEK - PAMIENKE

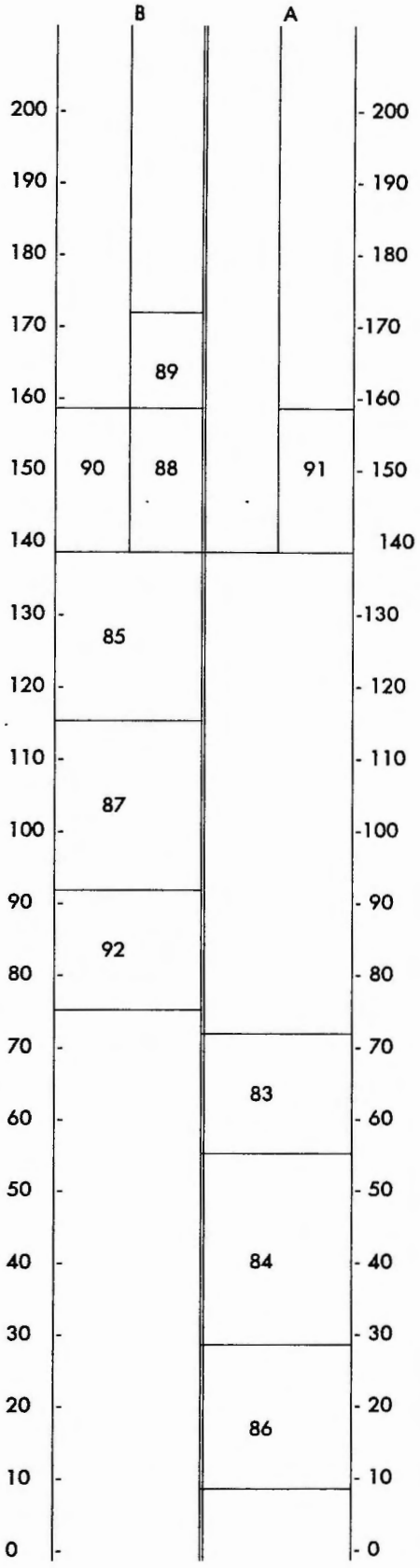
Visited blocks	Associated blocks	Planting year /clone	Tapping system and stimulation 1992	a.i. mg/t/year
32 and 71	21,22,23,24,25,28,29,30,31, 33,34,35,46,45,65,66,67,68, 69,70,72,73,74	**1970** GT 1	S/2 d/4 ↓ 10 stim. 5 %	400
	part of 21,35,32	AV 2037	S/2 d/4 ↓ 12 stim. 5 %	480
21	15,16,17,18,19,20,26	**1971** GT 1	S/2 d/4 ↓ 10 stim. 5 %	400
27	37,38,39,40,41,74,75,76,77	**1971** GT 1	S/4 d/4 ↑ 20 stim. 5 %	400
13	14 A	**1973** GT 1	S/4 d/4 ↑ 15 stim. 5 %	300
14 B	-	**1974** GT 1	S/4 d/4 ↑ 15 stim. 5 %	300
55	59	**1974** GT 1	S/4 d/4 ↑ 15 stim. 5 %	300
		AVROS	S/4 d/4 ↑ 20 stim. 5 %	400
60	61,56,57,58	**1975** GT 1	S/4 d/4 ↑ 15 stim. 5 %	300
64 A	62,63	**1978** AV 2037	S/2 d/4 ↓ 12 stim. 5 %	480
64 B	-	PR 107	S/2 d/4 ↓ 10 stim. 5 %	400
68	65,63,61,12,14	**1979** AV 2037	S/2 d/4 ↓ 12 stim. 5 %	480
		GT 1 - PR 107	S/2 d/4 ↓ 10 stim. 5 %	400
78	79,80	**1979** PR 107	S/2 d/4 ↓ 12 stim. 5 %	480
14	12,61,63	**1979** GT 1	S/4 d/4 ↑ 15 stim. 5 %	300
81	80,82,83	**1981** GT 1	S/2 d/4 10 stim. 5 %	480
4	-	**1982** GT 1	S/2 d/4 10 stim. 5 %	400
		AVROS	S/2 d/4 12 stim. 5 %	480
9	10	**1985** PB 235	S/4 d/4 3 stim. 2.5 %	45

Date of visit : 14/6/91
Name of the plantations : AEK - PAMIENKE
Block : 32 (associated blocks for tapping and production 21-22-23-28-33-34-45-46-66-73)
area : 36 ha (10 ha - AV. 2037)
clone : GT 1
date of planting : 1970
date of opening : 1979

Observations :
. productions of these blocks are low in many case
because of the poor number of trees in tapping and/or low land.

. we can observe on this block leaves fall.
follow the evolution of the disease.

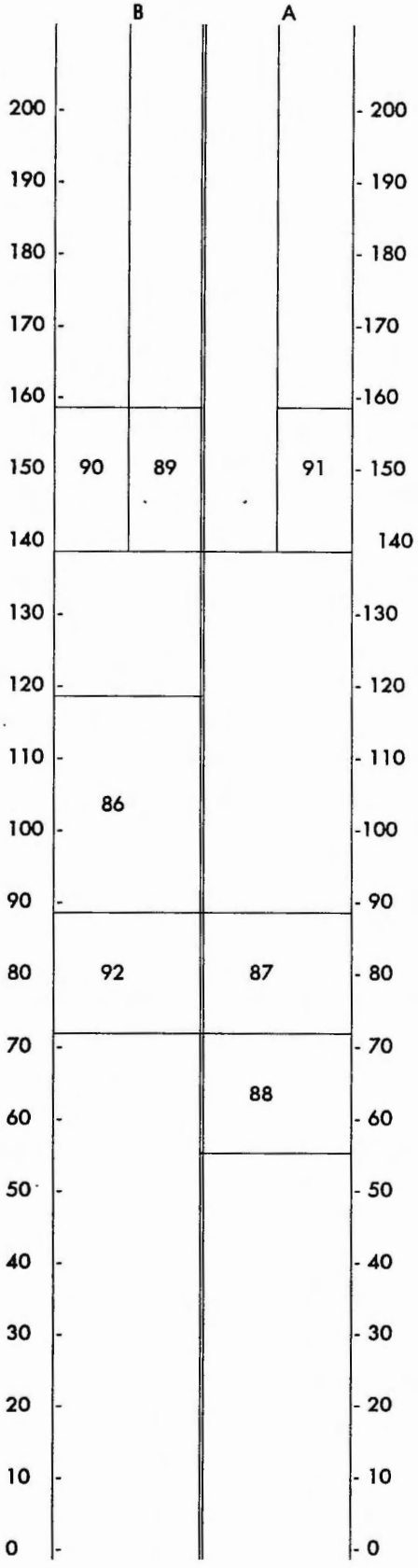
. 1992 tapping system S/2 d/4 downward
. 10 stimulations 5% - GT 1
. 12 stimulations 5 % - AV. 2037.



Year of Tapping	Tapping System	Production KG/HA
1982		1360
1983		1209
1984		1569
1985		1706
1986		1672
1987		1795
1988	S/4 d /4 ↗ 12 stim. 5 %	1808
1989	"	1338
1990	"	1424
1991	"	
1992	S/2 d/4 ↘ 10 stim. 5 %	

Date of visit : 14/6/91
Name of the plantations : AEK - PAMIENKE
Block : 71 (associated blocks tapping and production : 24-25-29-30-31-35-65-67-68-69-70-72-74)
area : 29 ha
clone : GT 1
date of planting : 1970
date of opening : 1979

Observations :
. productions of these blocks are good.
. number of trees in tapping for 91 = 330 t/t/ha.
. 1992 come back to the S/2 d/4 downward as shown on the diagram.
10 stimulations 5 %.

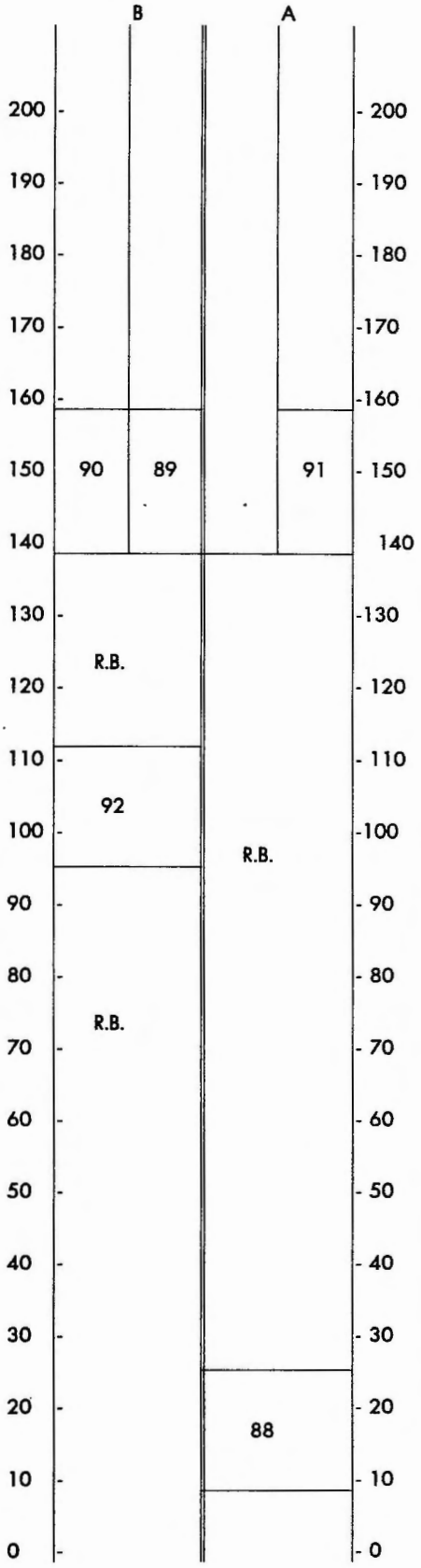


Year of Tapping	Tapping System	Production KG/HA
-	-	-
1986	S/2 d/4 ↘ 12 stim. 2.5 %	2122
1987	"	2413
1988	"	2000
1989	S/4 d/4 ↗ 12 stim. 5 %	1957
1990	"	2146
1991	"	
1992	S/2 d/4 ↘ 10 stim. 5 %	

Date of visit : 14/6/91
Name of the plantations : AEK - PAMIENKE
Block : 21 (associated blocks : 15 -16 - 17 - 18 - 19 - 20 - 26)
area : 72 ha
clone : AVROS 2037 = 32 ha - GT 1 = 40 ha
date of planting : 1971
date of opening : 1979

Observations :

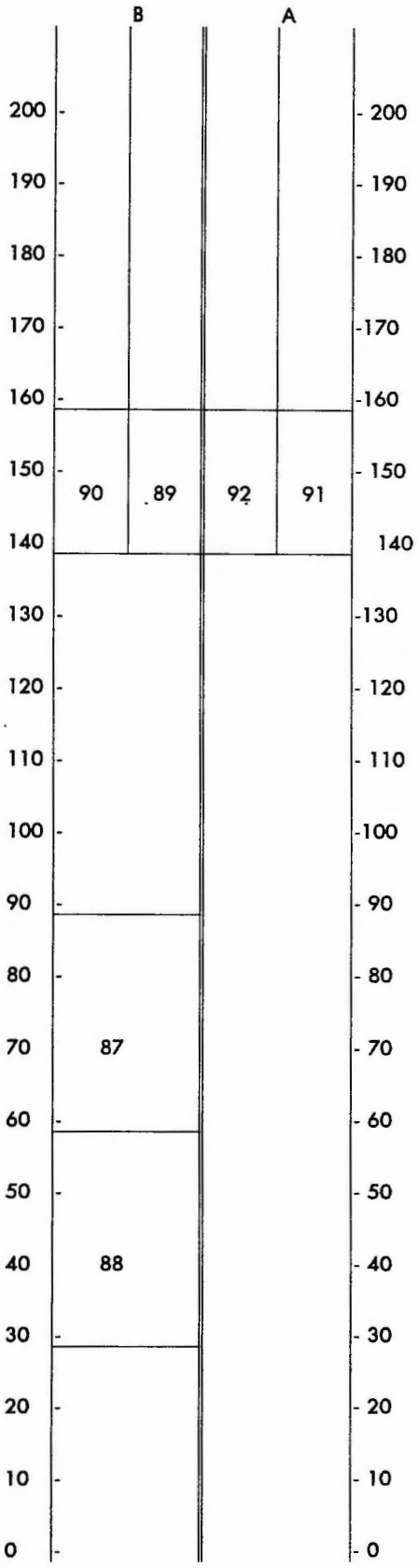
. productionsof these blocks are correct
. in 1992, come back S/2 d/4 downward
  . 10 stim. 5 % - GT 1
  . 12 stim. 5 % - AV. 2037



Year of Tapping	Tapping System	Production KG/HA
-	-	-
1988	S/2 d/4 ↘ 10 stim. 5 %	
1989	S/4 d/4 ↗ 13 stim. 5 %	
1990	"	
1991	"	
1992	S/2 d/4 ↘ 10 stim. 5 %	

Date of visit : 14/6/91
Name of the plantations : AEK - PAMIENKE
Block : 27 (associated blocks - 37 - 38 - 39 - 40 - 41 - 75 - 76 - 77)
area : 32 ha
clone : GT 1
date of planting : 1971
date of opening : 1979

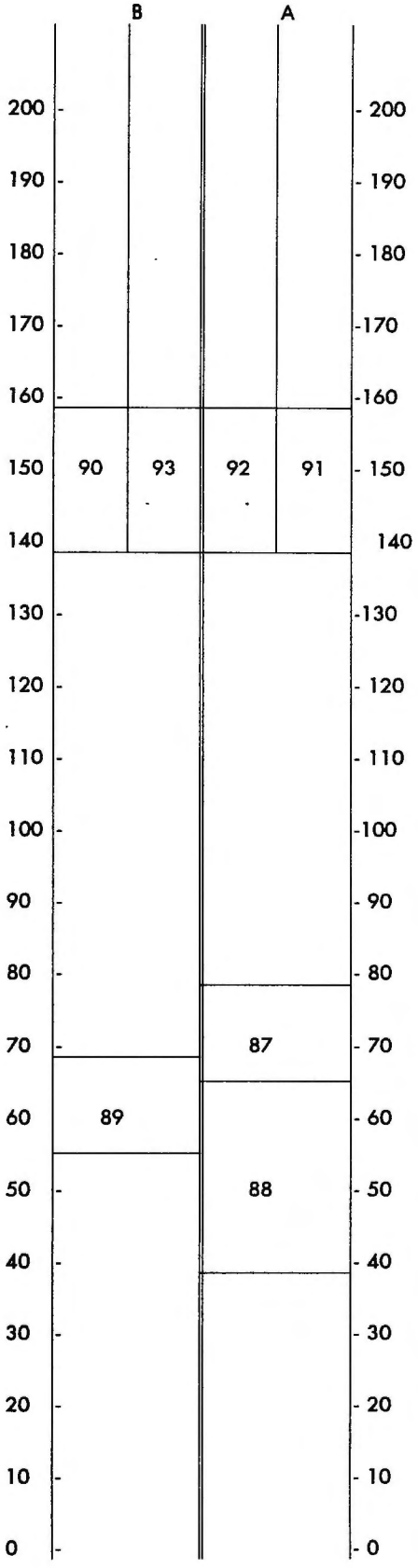
Observations :
. productions of these blocks are good except for block 38 :
number of trees in tapping is only 201 t/t/ha
. in 1992 S/4 d/4 upward see the diagram = 15 stim. 5 %



Year of Tapping	Tapping System	Production KG/HA
-	-	-
1987	S/2 d/4 ↘ 10 stim. 5 %	
1988	"	
1989	S/4 d/4 ↗ 12 stim. 5 %	
1990	"	
1991	"	
1992	" 20 stim. 5 %	

Date of visit : 14/6/91
Name of the plantations : AEK - PAMIENKE
Block : 13 (associated 14 A)
area : 62 ha
clone : GT 1
date of planting : 1973
date of opening : 1979

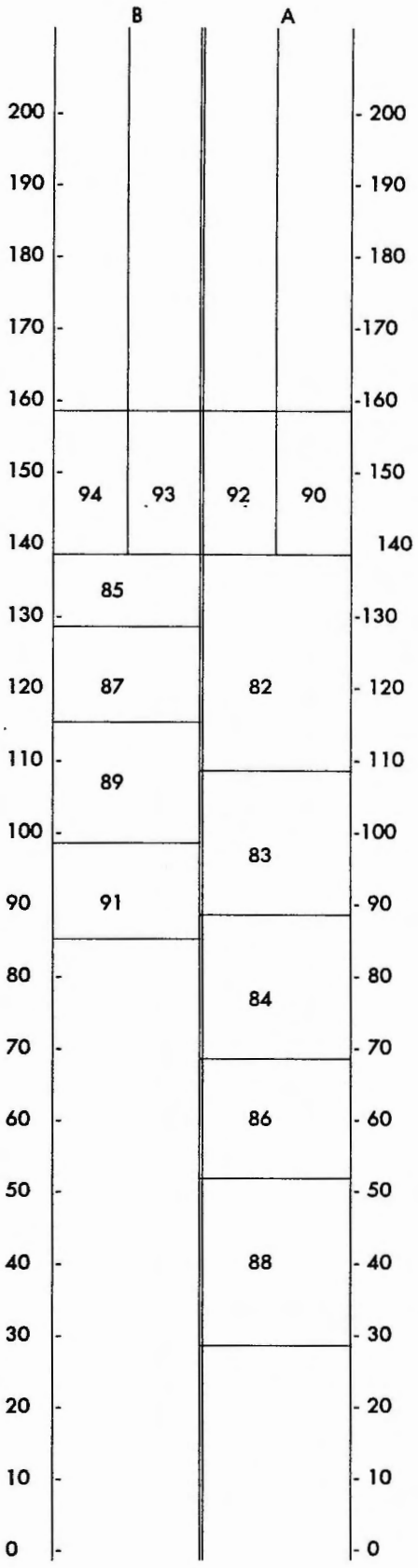
Observations :
. good quality of tapping
. follow the diagram in 1992
S/4 d/4 upward, 15 stimulations 5 %.



Year of Tapping	Tapping System	Production KG/HA
1982		1023
1983		1297
1984		1570
1985		1763
1986		1283
1987		1180
1988		1210
1989		1458
1990	1/4 S ↗ d/4 + 12 stim. 5 %	1597
1991	+ 15 stim. 5 %	
1992	+ 15 stim. 5 %	

Date of visit : 14/6/91
Name of the plantations : AEK - PAMIENKE
Block : 14 B
area : 38 ha
clone : GT 1
date of planting : 1974
date of opening : 1980

Observations :
. level of production correct
. 1992 S/4 d/4 upward tapping
15 stimulations 5 %



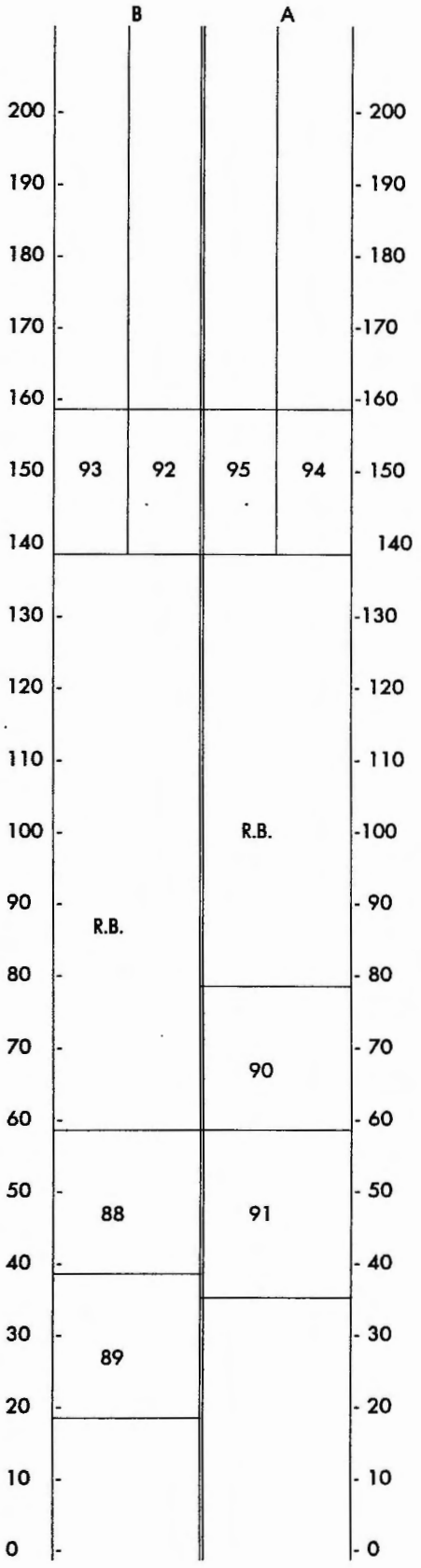
Year of Tapping	Tapping System	Production KG/HA
1982		1458
1983		1744
1984		1609
1985		1895
1986		1632
1987		1381
1988		1379
1989		1849
1990	1/4 S d/4 ↗ + 12 stim.2.5 %	1701
1991	1/2 d/4 ↘ + 10 stim. 5 %	
1992	1/4 S d/4 ↗ + 15 stim. 5 %	

Date of visit : 14/6/91
Name of the plantations : AEK - PAMIENKE
Block : 55 (associated 59 with 50 % of AVROS 2037)
area : 46 ha
clone : GT 1
date of planting : 1974
date of opening : 1980

Observations :
. level of production too low.
many small trees with dryness.

. 1992 open S/4 d/4 upward as shown on the diagram.
the first 1/4 S must located at the lowest point of the full spiral.

S/4 d/4 + 15stim. 5 % - GT1
S/4 d/4 + 20 stim. 5 % AVROS 2037

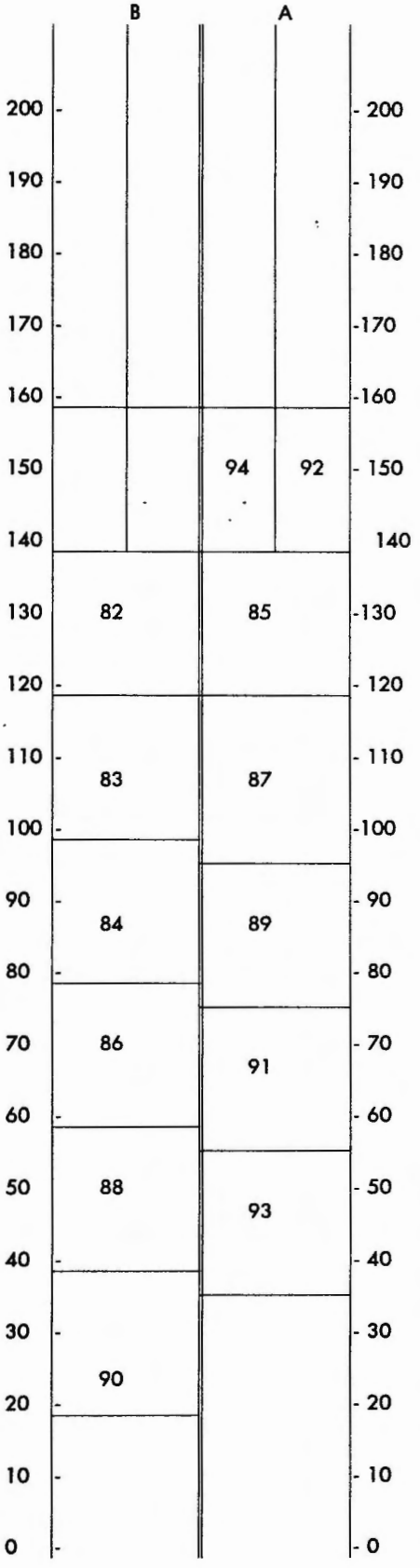


Year of Tapping	Tapping System	Production KG/HA
-	-	-
1988	S/2 d/4 ↘ 10 stim. 5 %	961
1989	"	1091
1990	"	1063
1991	12 stim. 5 %	
1992	S/4 d/4 ↗ 15 stim. 5 %	

Date of visit : 14/6/91
Name of the plantations : AEK - PAMIENKE
Block : 60 (associated blocks 61 - 58 - 57 - 56)
area : 35 ha
clone : GT 1
date of planting : 1975
date of opening : 1982

Observations :

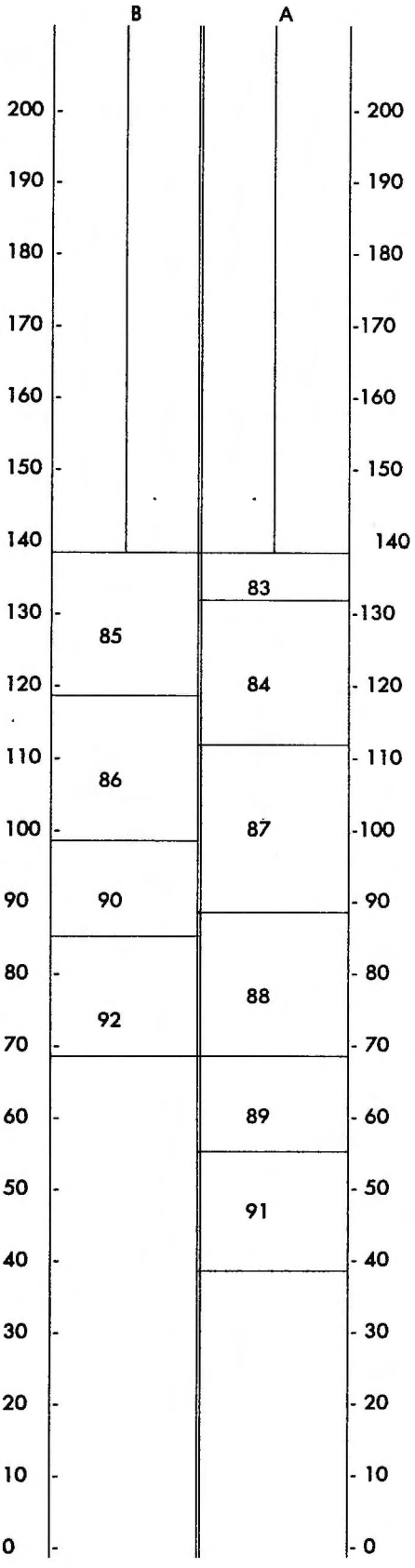
. leaves are much better in 1991
. number of trees in tapping : 273 t/t/ha
. the low level of production could be explain by the percentage of low land.
. in 1992, change panel in S/4 ↗ as shown in the diagram.



Year of Tapping	Tapping System	Production KG/HA
1982		803
1983		1062
1984		918
1985		1123
1986		1128
1987		909
1988		932
1989		1256
1990	1/2 S d/4 + 10 stim. 5 %	1168
1991	1/2 S d/4 + 10 stim. 5 %	
1992	1/4 ↗ d/4 + 15 stim. 5 %	

Date of visit : 14/6/91
Name of the plantations : AEK - PAMIENKE
Block : 64 A AVROS 2037 15 ha (associated blocks 62 - 63)
area : 64 B PR 107 18 ha
clone :
date of planting : 1978
date of opening : 1983

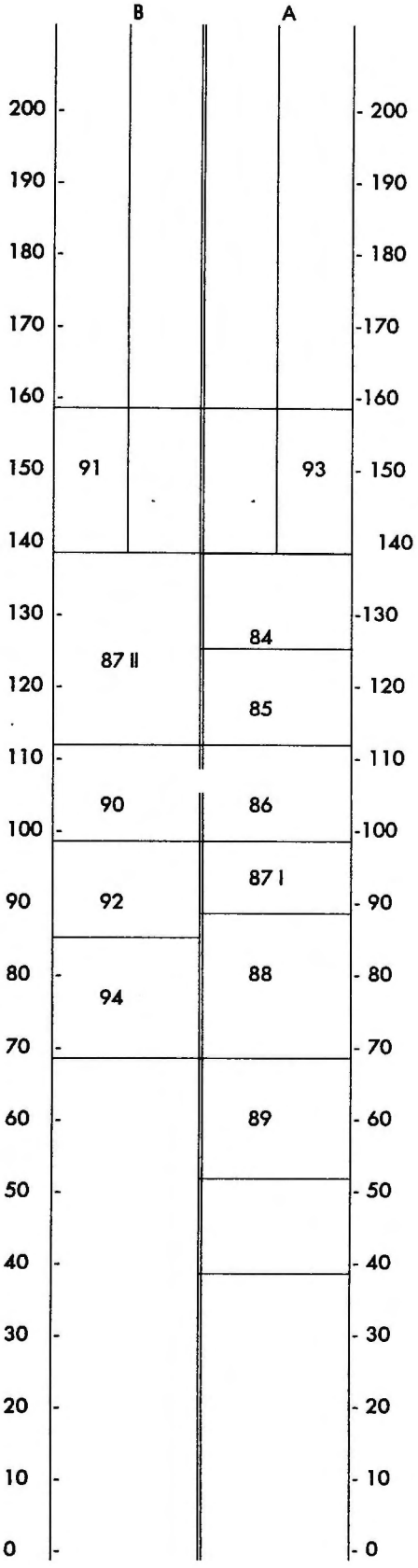
Observations :
. the leaves are in a better condition, compared with last year.
. level of production is correct excepted for block 63
but the number of trees in tapping is abnormally low 129 t/t/ha.
. follow the diagram.



Year of Tapping	Tapping System	Production KG/HA	
		AV2037	PR107
1983		313	448
1984		616	968
1985		936	1560
1986		1321	2168
1987		1131	1760
1988		1373	2099
1989		1417	2779
1990	1/2 S d/4 + 10 stim. PR 107	1582	3253
	+ 12 stim. AVROS		
1991	"		
	"		
1992	"		

Date of visit : 14/6/91
Name of the plantations : AEK - PAMIENKE
Block : 68 (associated block : part of 65, 63, 61, 12, 14)
area : 25.30 ha
clone : AV 2037 - GT 1 - PR 107
date of planting : 1979
date of opening : 1984

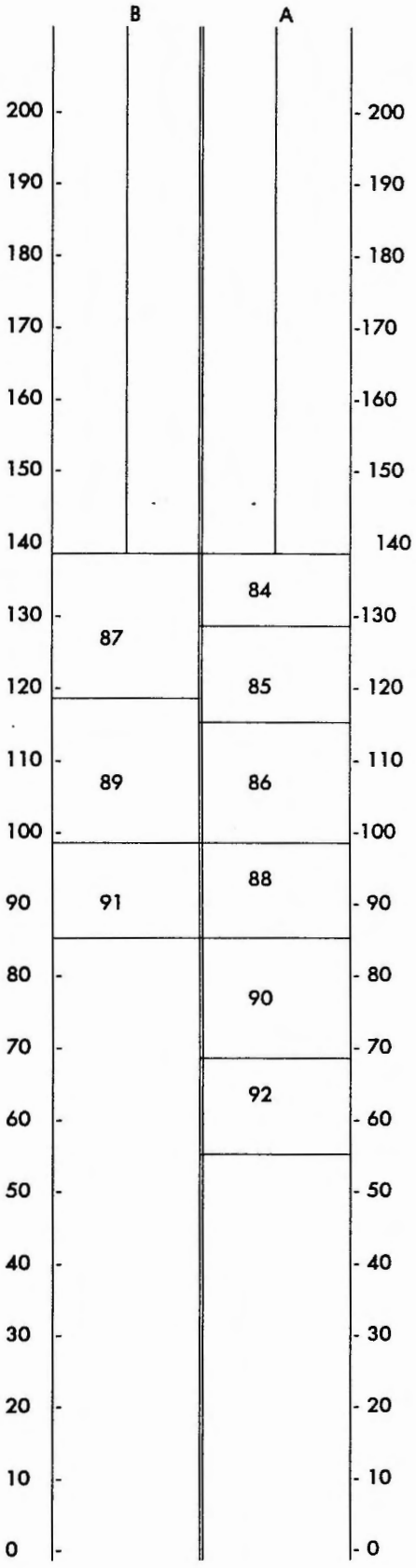
Observations :
. production is too low
. in 1992, come back S/2 d/4 downward
with 10 stim. 5 % for GT 1
12 stim. 5 % for AVROS 2037



Year of Tapping	Tapping System	Production KG/HA
1984	S/2 d/4	300
1985		509
1986		744
1987		967
1988		988
1989	1/2 S d/4 12 stim. 5 %	998
1990	1/2S d/4 12 stim. 5 %	1145
1991	1/4 S d/4 + 20 stim. 5 %	
1992	1/2 S d/4 + 12 stim. 5 %	

Date of visit : 14/6/91
Name of the plantations : AEK - PAMIENKE
Block : 78 (associated blocks 79 - part of 80)
area : 13.8 ha
clone : PR 107
date of planting : 1979
date of opening : 1984

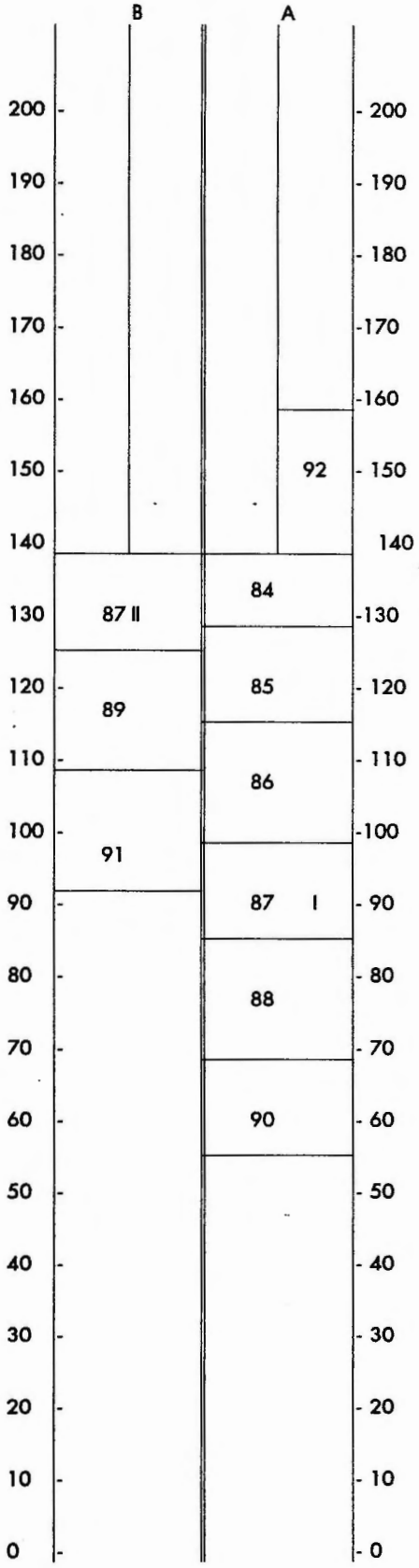
Observations :
. production is correct
. follow the diagram. One stimulation more in 1992



Year of Tapping	Tapping System	Production KG/HA
1984	S/2 d/4	482
1985		664
1986		934
1987		1118
1988		1262
1989		1513
1990	1/2 S d/4 + 11 stim. 5 %	1785
1991	"	
1992	" + 12 stim. 5 %	

Date of visit : 14/6/91
Name of the plantations : AEK - PAMIENKE
Block : 14 (associated blocks : 12 - 61 - 63)
area : 14 ha
clone : GT 1
date of planting : 1979
date of opening : 1984

Observations :
. production is too low
. in 1992 change pannel S/4 d/4 upward
15 stimulations 5 %

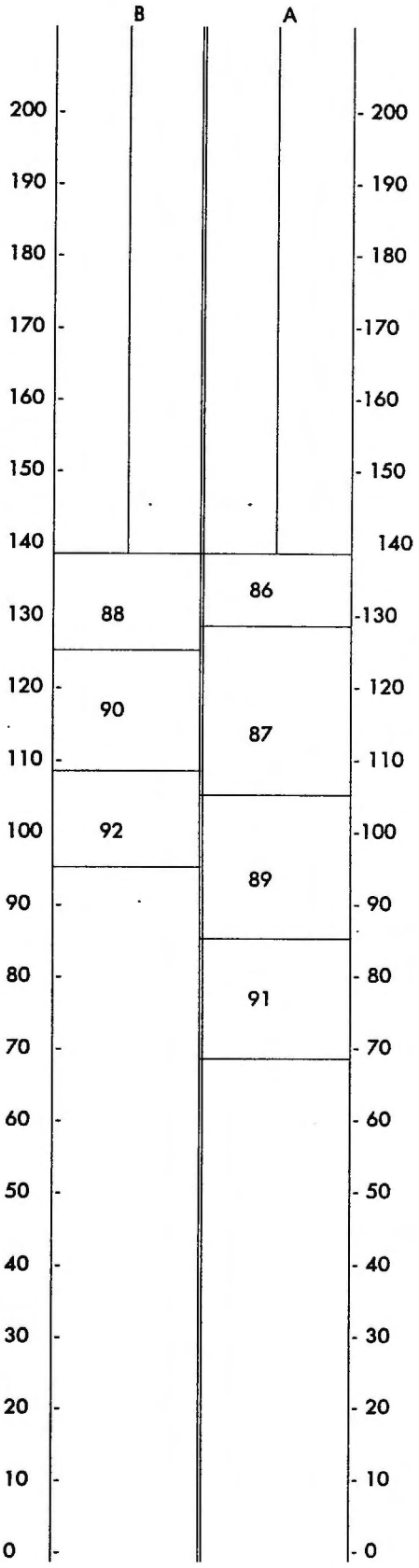


Year of Tapping	Tapping System	Production KG/HA
1984		171
1985		607
1986		740
1987		564
1988		762
1989		1019
1990	1/2 S d/4 + 10 stim. 5 %	1002
1991	1/2 S d/4 + 12 stim. 5 %	
1992	1/4 S d/4 ↗ + 15 stim. 5 %	

Date of visit : 14/6/90
Name of the plantations : AEK - PAMIENKE
Block : 81 - part of 80 - 82 - 83
area : 44 ha
clone : GT 1
date of planting : 1981
date of opening : 1986

Observations :

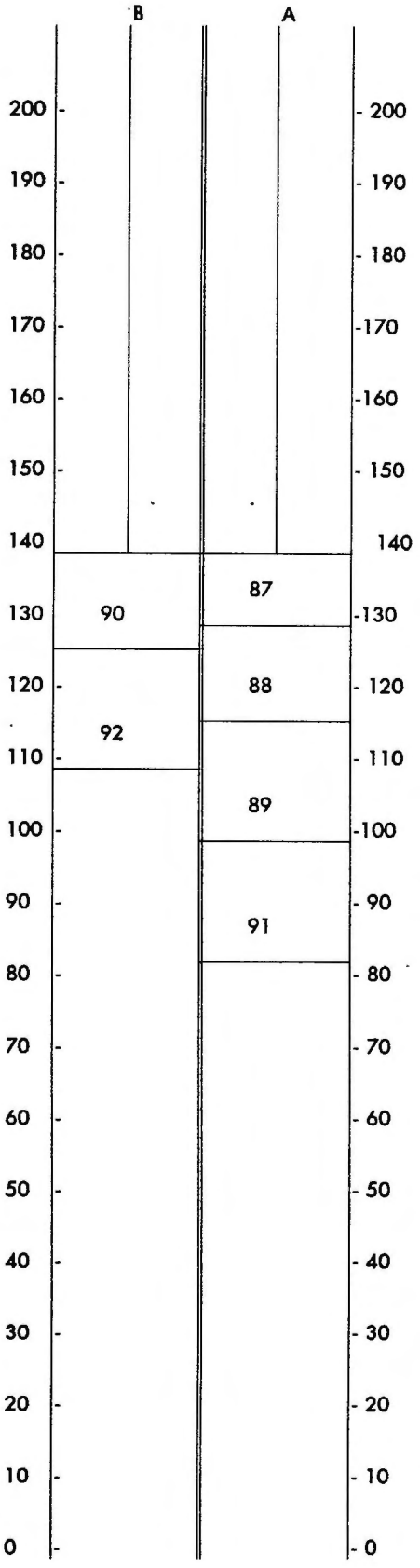
. follow the diagram.
. 1992, S/2 d/4 downward
10 stimulations at 5 %



Year of Tapping	Tapping System	Production KG/HA
1986	S/2 d/4	358
1987	"	608
1988	"	696
1989	"	948
1990	1/2 d/4 + 11 stim. 2.5 %	1135
1991	1/2 d/4 12 stim. 2.5 %	
1992	- 10 stim. 5 %	

Date of visit : 14/6/91
Name of the plantations : AEK - PAMIENKE
Block : 4
area : 68 ha
clone : AV 2037/ GT1
date of planting : 1982
date of opening : 1987

Observations :
. level of production too low
. follow the diagram.
. according to the good conditions
of leaves in 1992, increase stimulation for
GT 1 = 10 stim. 5 %
AVROS = 12 stim. 5 %

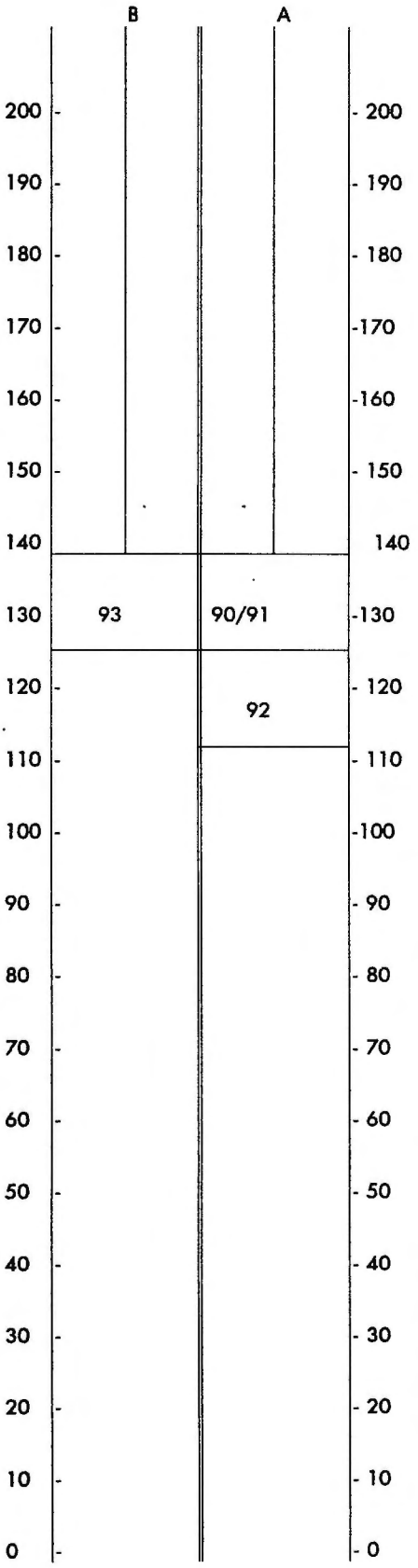


Year of Tapping	Tapping System	Production KG/HA
1987		817
1988		799
1989		1087
1990	1/2 S d/4 + 9 stimulations 5 %	1148
1991	" GT 1 + 12 stim. 2.5 %	
	AVROS + 9 stim. 5 %	
1992	GT 1 + 10 stim. 5 %	
	AVROS + 12 stim. 5 %	

Date of visit : 14/6/91
Name of the plantations : AEK - PAMIENKE
Block : 9 (associated blocks 10)
area : 44 ha
clone : PB 235
date of planting : 1985
date of opening : March 1990

Observations :

. according to the good level of production at opening in 1992, only 3 stimulations at 2.5 %



Year of Tapping	Tapping System	Production KG/HA
1990	S/2 d/4 1 stim. 2.5 %	625
1991	S/2 d/4 2 stim. 2.5 %	
1992	S/2 d/4 3 stim. 2.5 %	

2.2. HALIMBE

- Area tapped in 1990 : 623 ha
- Area being tapped in 1991 : 1,251 ha
- Average production per ha : 561 kg

Although production is increasing, the production level per hectare remains low, for the following reasons:

- The number of trees per hectare and being tapped is low in certain blocks.
- Young plantings (the oldest are 10 years old); the average production level increases proportionally with age.
- The defoliation/refoliation phenomenon is not clear-cut on this estate. Leaf diseases have had little impact this year, probably due to climatic conditions. Despite low leaf disease incidence, around 20% of the trees were undergoing defoliation at the time of our visit in JUNE, whereas on the other estates GT 1 refoliation had already finished several weeks before.

- It would be interesting to monitor the production increases on this estate with its specific ecological and topographical conditions, and compare them to the yields obtained under so-called "conventional" cropping conditions.

HALIMBE

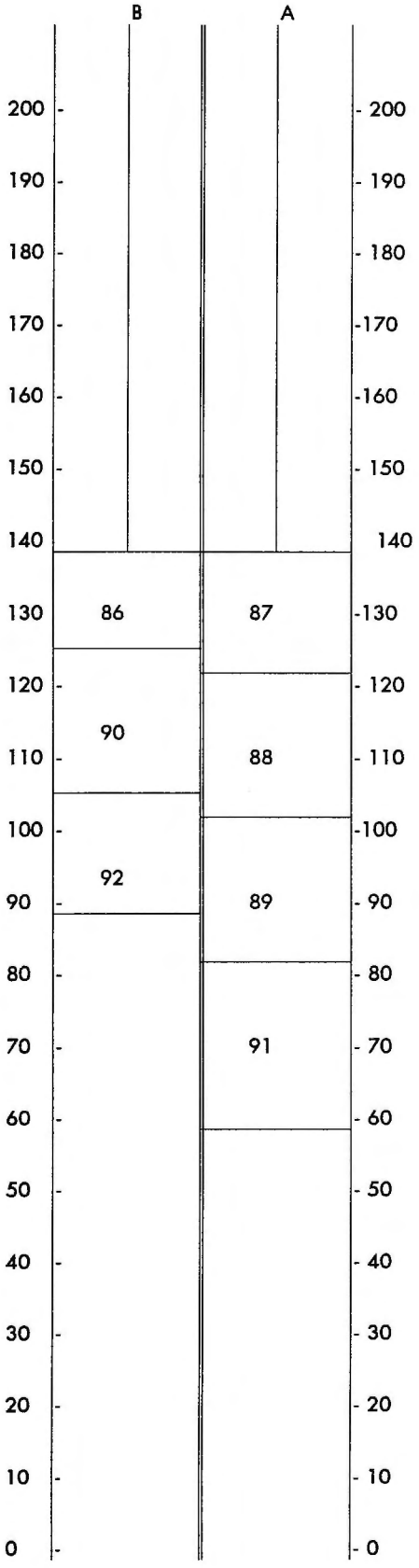
Tapping system and stimulation 1992

Visited blocks	Associated blocks	Planting year /clone	Tapping system and stimulation 1992	a.i. mg/t/year
7	-	**1980** GT 1	S/2 d/4 10 stim. 5 %	400
12	-	**1981** GT 1	S/2 d/4 12 stim. 2.5 %	240
13	14 - 15	**1982** GT 1	S/2 d/4 12 stim. 2.5 %	240
16	21 - 22	**1983** GT 1	S/2 d/4 12 stim. 2.5 %	240
2	6 - 7 - 10 - 18 - 28 - 29 - 34	**1984** GT 1	S/2 d/4 10 stim. 2.5 %	175
3	4 - 5 - 8 - 11 - 12	**1984** GT 1	S/2 d/4 10 stim. 2.5 %	175
23	17	**1984** PB 235	S/2 d/4 6 stim. 2.5 %	120
27	33	**1984** PR 261	S/2 d/4 9 stim. 5 %	360
	26 (1983)	**1984** AV. 2037	S/2 d/4 9 stim. 5 %	360
8	9 - 13 - 14 - 15 - 19 - 20 24 - 26 - 28 - 29 - 33 - 36	**1985** PB 260	S/2 d/4 4 stim. 2.5 %	70

Date of visit : 15/6/91
Name of the plantations : HALIMBE
Block : 7
area : 13 ha
clone : GT 1
date of planting : 1980
date of opening : 1986

Observations :

. only 227 t/t/ha
. be careful to the bark consumption.
On panel A, the consumption was to high.
. 1992 change pannel and increase the stimulation at 10 stim. 5 %

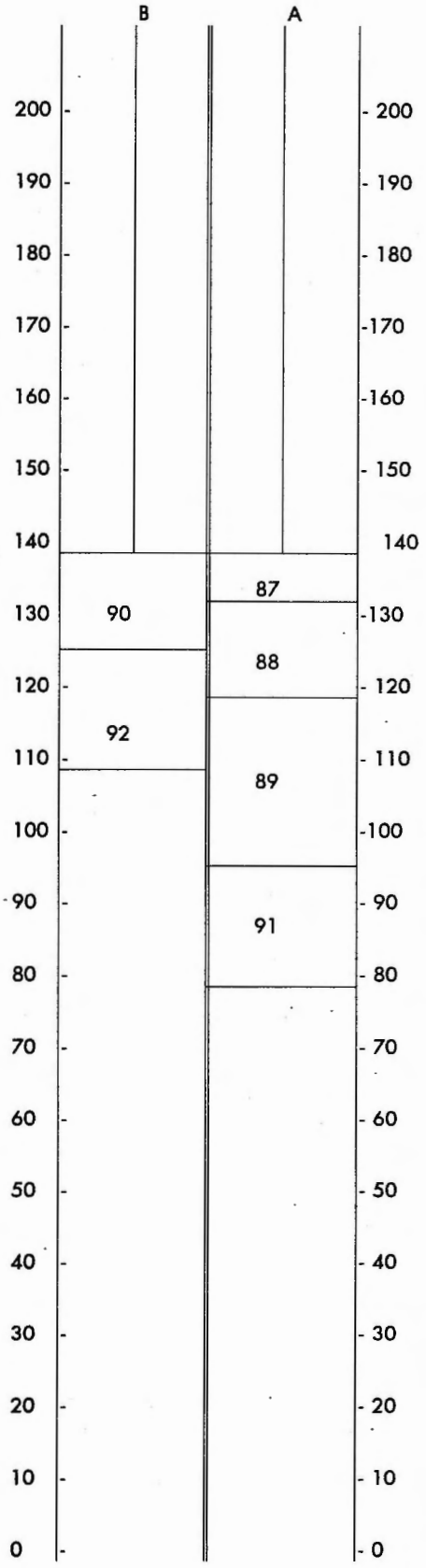


Year of Tapping	Tapping System	Production KG/HA
1986	S/2 d/4 stim.	226
1987	"	902
1988	"	1062
1989	"	575
1990	" 12 stim. 2.5 %	747
1991	" "	
1992	" 10 stim. 5 %	

Date of visit : 15/6/91
Name of the plantations : HALIMBE
Block : 12
area : 36 ha
clone : GT 1
date of planting : 1981
date of opening : 1987

Observations :

. only 259 t/t/ha
. in 1992 change pannel as on the diagram
same stimulation = 12 stim. 2.5 %.

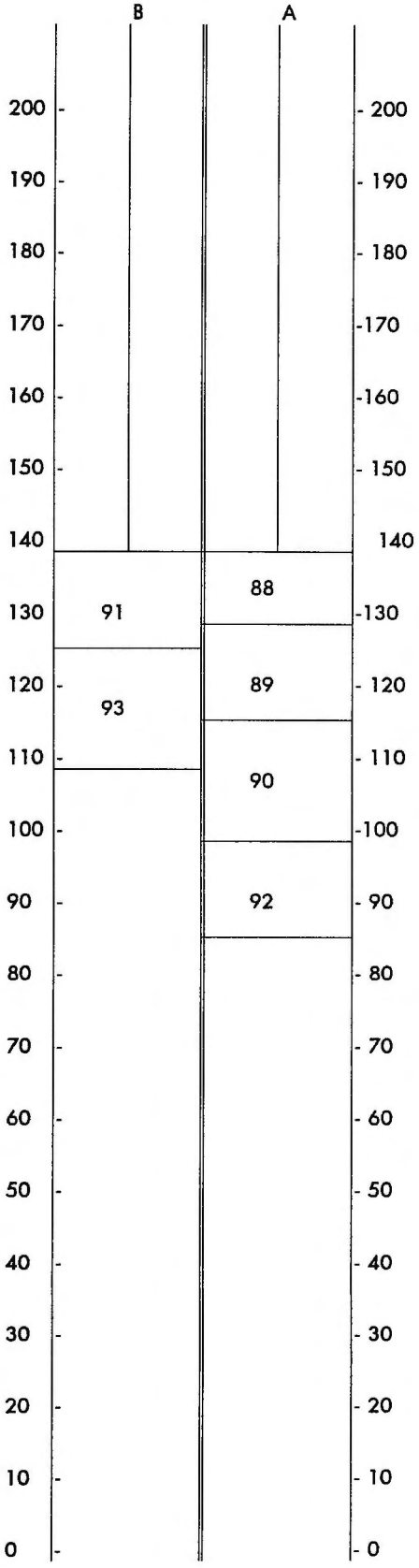


Year of Tapping	Tapping System	Production KG/HA
1987		301
1988		827
1989		644
1990	1/2 S d/4 + 10 stim. 2.5 %	819
1991	" + 12 stim. 2.5 %	
1992	"	

Date of visit : 15/6/91
Name of the plantations : HALIMBE
Block : 13 (associated blocks 14-15)
area : 19 ha
clone : GT 1
date of planting : 1982
date of opening : 1988

Observations :

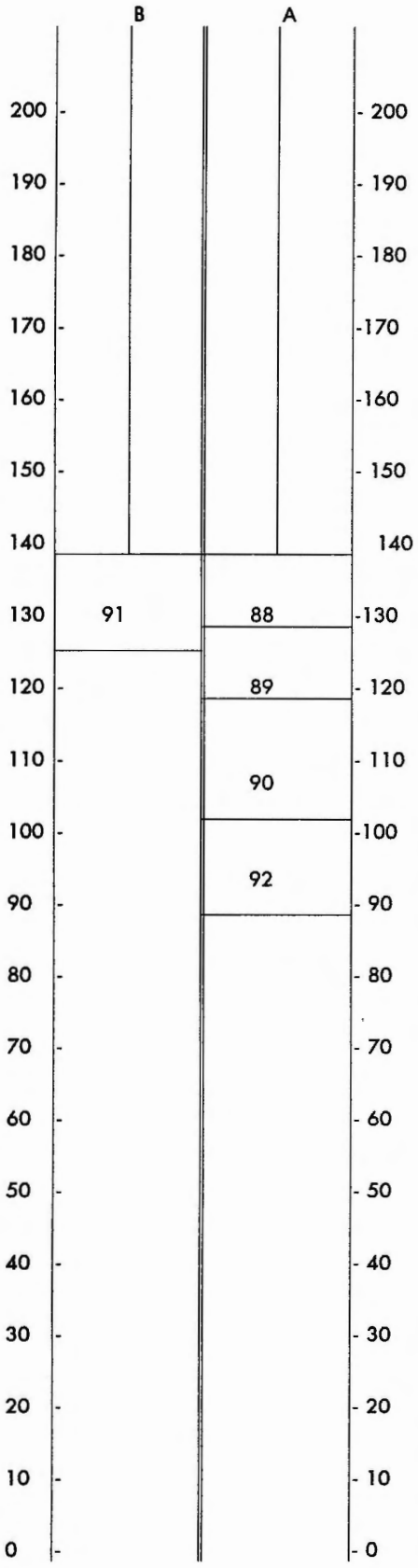
. only 231 t/t/ha
. change pannel and increase the stimulation = 12 stim. 2.5 %



Year of Tapping	Tapping System	Production KG/HA
1988		451
1989		513
1990	1/2 S d/4 + 8 stimulations 2.5 %	533
1991	"	
1992	" 12 stim. 2.5 %	

Date of visit : 15/6/91
Name of the plantations : HALINMBE
Block : 16 (associated 21 - 22)
area : 14 ha
clone : GT 1
date of planting : 1983
date of opening :

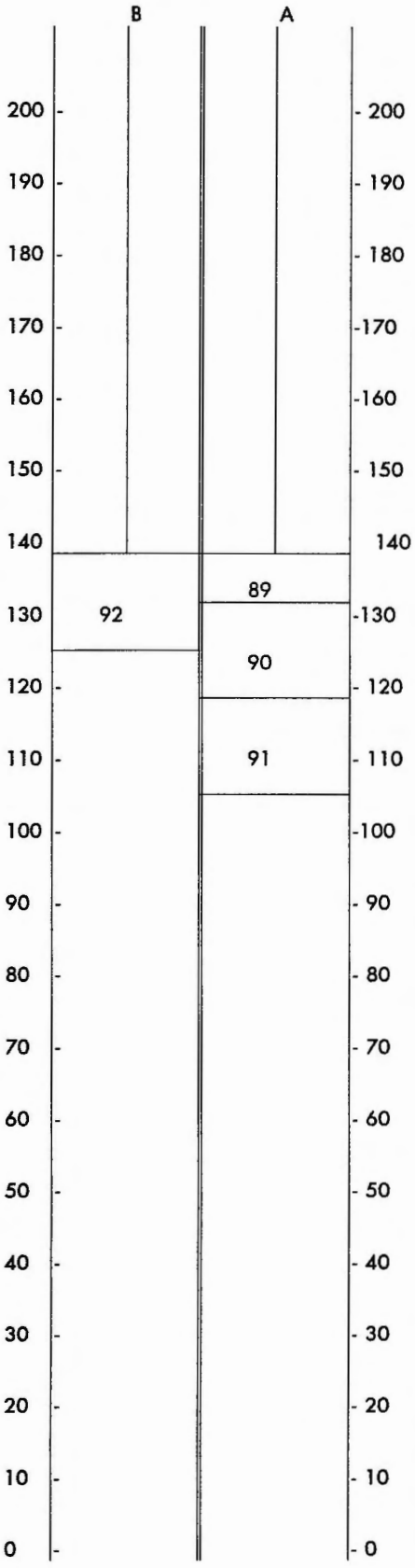
Observations :
. only 240 t/t/ha in spite of the 350 t/ha
. production will increase with the opening of the tree
. 1992 change panel and apply 12 stim. at 2.5 %



Year of Tapping	Tapping System	Production KG/HA
10/88	S/2 d/4	99
1989	" 6 stim. 2.5 %	125
1990	8 stim.	207
1991	10 stim. 2.5 %	
1992	12 stim. 2.5 %	

Date of visit : 15/6/91
Name of the plantations : HALIMBE
Block : 2 (associated blocks 6 - 7 - 10 - 18 - 28 - 29 - 34)
area : 36 ha
clone : GT 1
date of planting : 1984
date of opening : 1989

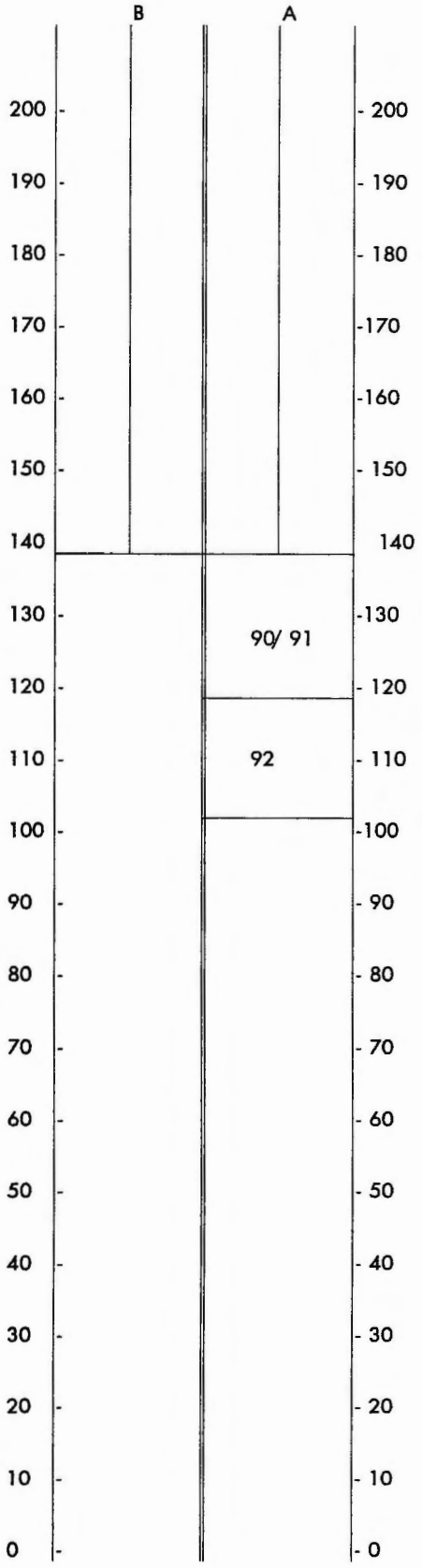
Observations :
. only 188 t/t/ha with a total of 258 t/ha
. 80 % of the tree are just refoliated.
20 % are still in defoliation.
. quality of tapping is good.
. the general aspect of the trees is better than last year.



Year of Tapping	Tapping System	Production KG/HA
October 1989	1/2 S d/4	82
1990	1/2 S d/4 8 stim. 2.5 %	295
1991	"	
1992	" 10 stim. 2.5 %	

Date of visit : 15/6/91
Name of the plantations : HALIMBE
Block : 3 (associated blocks 4 - 5 - 8 - 11 - 12)
area : 25 ha
clone : GT 1
date of planting : 1984
date of opening : 1990

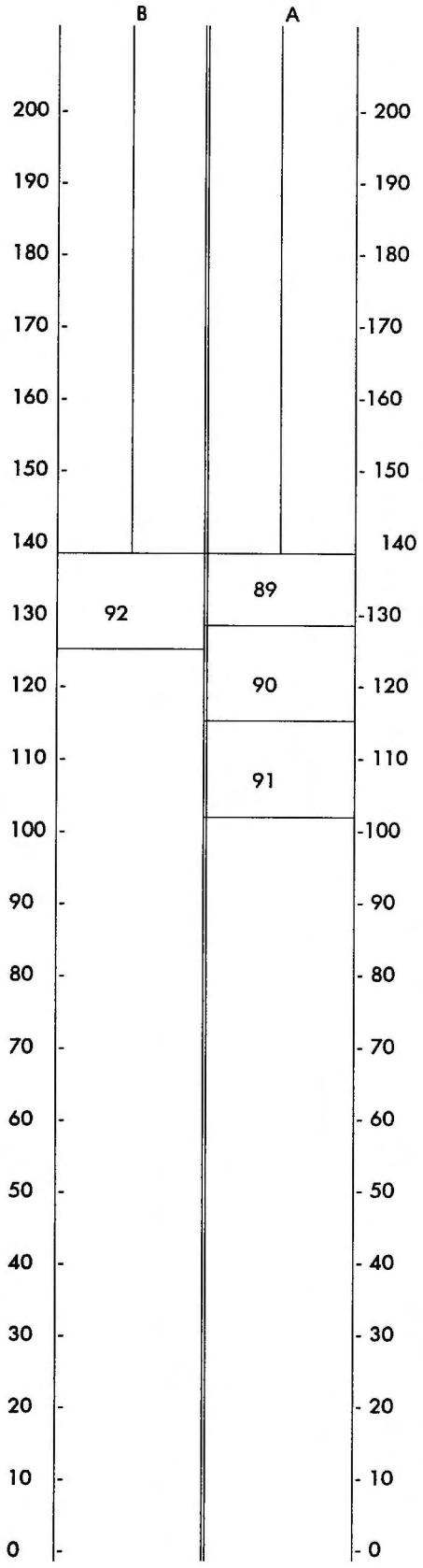
Observations :
. only 191 trees/t/ha and a total of 339 t/ha
. leaves look healthy this year
. defoliation/refoliation is not uniform
about 30 % of the trees are in defoliation.



Year of Tapping	Tapping System	Production KG/HA
10/90	S/2 d/4	162
1991	S/2 d/4 8 stim. 2.5 %	
1992	S/2 d/4 10 stim. 2.5 %	

Date of visit : 15/6/91
Name of the plantations : HALIMBE
Block : 23 (associated 17 - PB 260)
area : 31 ha
clone : PB 235
date of planting : 1984
date of opening : 1989

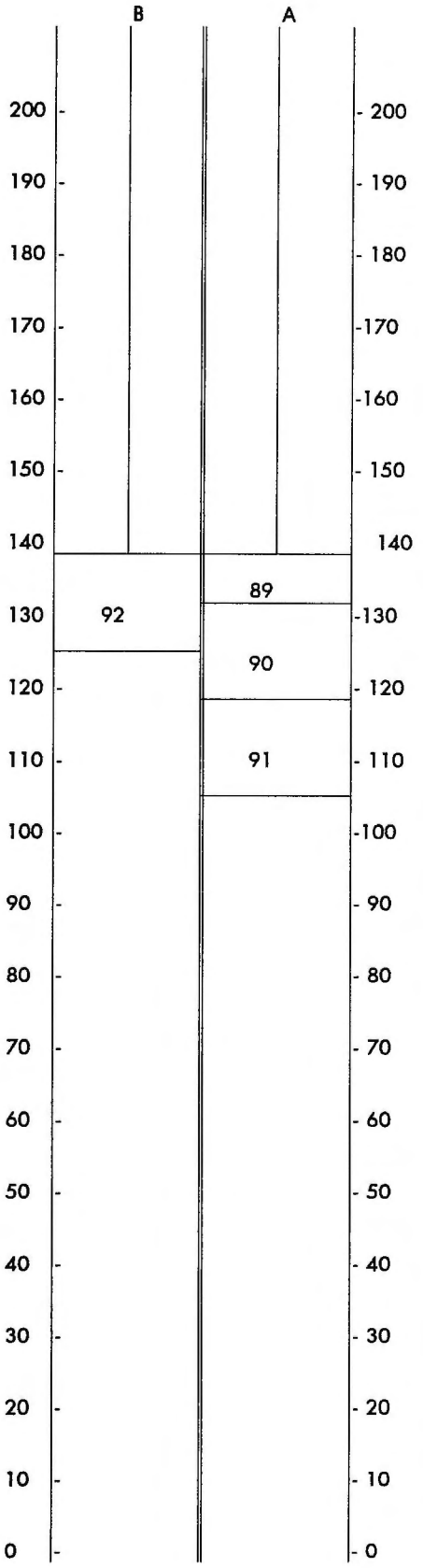
Observations :
. the crowns are light. Follow the evolution of the foliar density.
. 261 trees/t/ha for a total of 329 t/ha.
. change pannel in 1992 and apply 6 stim. at 2.5 %.



Year of Tapping	Tapping System	Production KG/HA
1989		543
1990	1/2 S d/4 + 4 stim. 2.5 %	742
1991	" "	
1992	6 stim. 2.5 %	

Date of visit : 15/6/91
Name of the plantations : HALIMBE
Block : 27 (associated block 33 - 26 (AVROS 2037)
area : 37 ha
clone : PR 261
date of planting : 1984
date of opening : October 1989

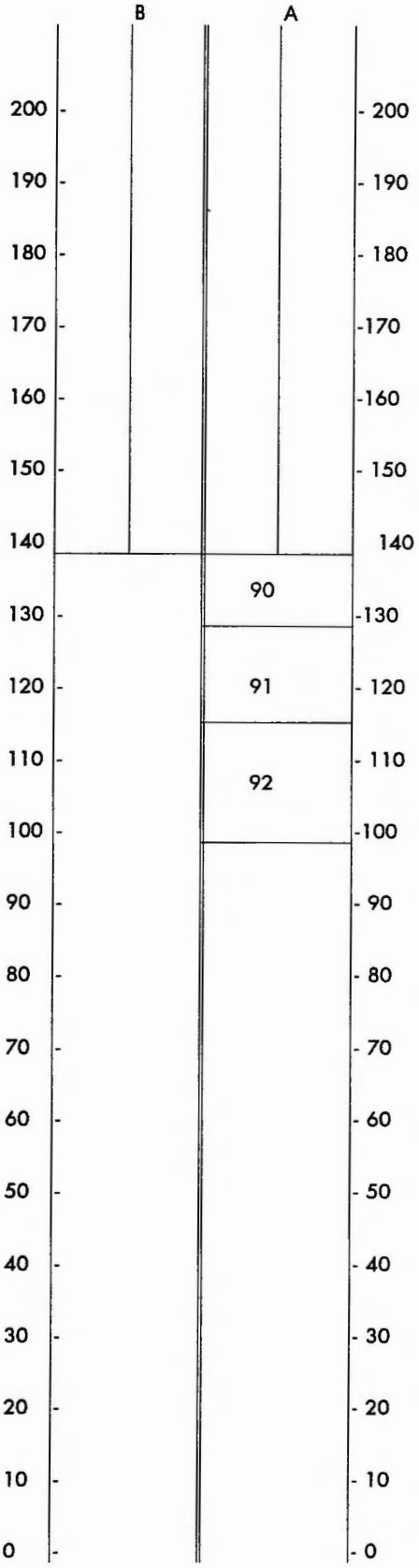
Observations :
. 189 trees/t/ha but 348 t/ha
. in 1992 change panel and increase the stimulation at 9.



Year of Tapping	Tapping System	Production KG/HA
1989		71
1990	1/2 S d/4 + 8 stim. 5 %	355
1991	"	
1992	" 9 stim. 5 %	

Date of visit : 15/6/91
Name of the plantations : HALIMBE
Block : 8 (associated 9 -13 - 14 - 15 - 19 - 20 - 24 - 26 - 28 - 29 - 33 - 36)
area : 17 ha
clone : PB 260
date of planting : 1985
date of opening :

Observations :
. 261 t/t/ha for a total of 340 trees/ha
. follow the diagram.



Year of Tapping	Tapping System	Production KG/HA
6/90	S/2 d/4	559
1991	" 4 stim. 2.5 %	
1992	" 4 stim. 2.5 %	

2.3. LIMA PULUH

- Area tapped in 1990 : 1,247 ha
- Area being tapped in 1991 : 1,456 ha
- Average production per ha : 1,617 kg
- Difference in production 1989/1990 : - 5.6%

  The drop in production is primarily due to the number of trees lost during the tornado in October 1990. To this need to be added the areas in which production started in the 1984 and 1985 crops, which, despite satisfactory production levels in the first 2 tapping years, tend to lower the general average.

- For the plantings aged 20 years and over, the number of trees being tapped per hectare in 1991 varies from 111 to 368.

  For those aged 10 to 20 years, the number varies from 198 to 400.

  For those under 10 years, the number varies from 228 to 393.

- Unfortunately, the tapping trial set up in block 10 is due to be halted at the end of 1991, as the number of broken trees now prevents reliable statistical analysis of the results. The conclusions will be given in Section 4 and the annex. A new trial will be set up at Tanjung-Maria.

- The tapping system recommendations for 1992 are given in the following tables and diagrams.

LIMA - PULUH
Tapping system and stimulation 1992

Visited blocks	Associated blocks	Planting year /clone	Tapping system and stimulation 1992	a.i. mg/t/year
38	35	**1964/70** GT 1	S/4 d/4 ↑ + 20 stim. 5 %	400
22	15,18,19,23	**1969** GT 1	S/4 d/4 ↑ + 20 stim. 5 %	400
50	14, 23,49,18,31,32	**1970** GT 1	S/4 d/4 ↑ + 20 stim. 5 %	400
10	23,47	**1979** GT 1	S/2 d/4 + 10 stim. 5 %	400
47	50	**1979** AV 2037-PR 107	S/2 d/4 + 12 stim. 5 %	480
6	48	**1980** GT1	S/2 d/4 + 10 stim. 5 %	400
	11	AV 2037	S/2 d/4 + 12 stim. 5 %	480
34	-	**1980** GT 1	S/2 d/4 + 10 stim. 5 %	400
24	25,27,29	**1981** AV 2037	S/2 d/4 + 14 stim. 5 %	560
		GT 1	S/2 d/4 + 12 stim. 5 %	480
17	5 A, 18 (GT1), 21 (PB5/51), 21 (PR255), 21 (PR261), 37	**1982** GT 1	S/2 d/4 + 12 stim. 2.5 %	240
		AV 2037	S/2 d/4 + 9 stim. 5 %	360
39	-	**1983** PB235 - 260	S/2 d/4 + 5 stim. 2.5 %	100
40	-	**1983** 3 clones	PB 5/51 5 stim. 2.5 %	100
			PR 261-255 8 stim. 5 %	280
36	37,38	**1984** PB235-260	S/2 d/4 + 5 stim. 2.5 %	100
6	5,13	**1985** PB 235 group	S/2 d/4 + 5 stim. 2.5 %	88
		PR 261 group	S/2 d/4 + 8 stim. 5 %	280
28	25,41	**1986** PB 235 group	S/2 d/4 + 4 stim. 2.5 %	60

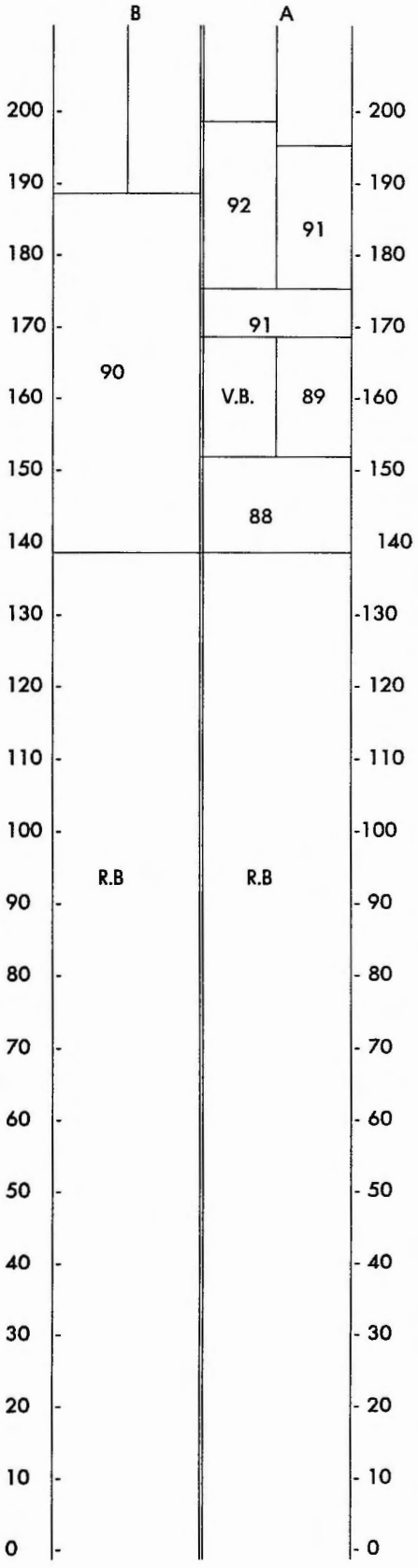
Date of visit : 20/6/91
Name of the plantations : LIMA - PULUH
Block : 38 (associated block 35)
area : 25 ha
clone : GT 1
date of plantin 1964
date of opening : "

Observations :

. this block must be replanted, but after the storm octobre 1990 the number of trees justified not to fall down the trees. Then, tapping system must be more conservative.

. From July 91 tap S/4 d/4 upward with a stimulation at 5 % every fortnight.

. 1992 S/4 d/4 ith 20 stimulations at 5 %
. Number of trees in tapping 215 t/t/ha.

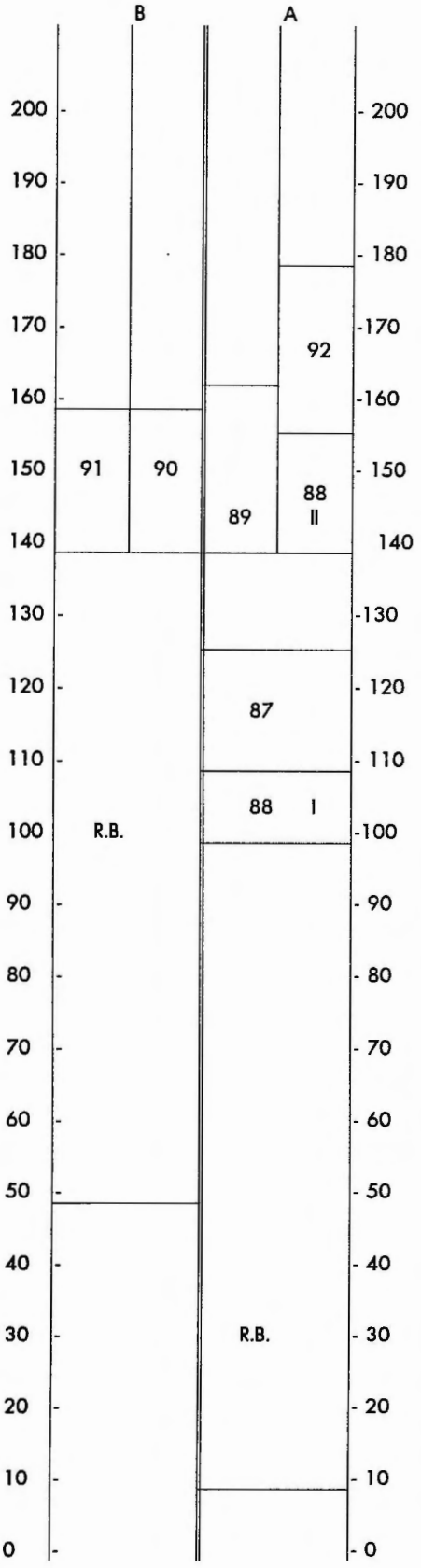


Year of Tapping	Tapping System	Production KG/HA
1988	S/2 d/4 7h stim. 5 %	1964
1989	S/4 d/4 12 stim. 5 %	1651
1990	S/2 d/4 7h "	3060
1991	see diagram	
1992	S/4 d/4 20 stim. 5 % 7h	

Date of visit : 20/6/91
Name of the plantations : LIMA - PULUH
Block : 22 (associated blocks - 23 - 19 - 18 - 15)
area : 28 ha
clone : GT 1
date of planting : 1969
date of opening :

Observations :

. Production is too low - increase stimulation
. Folbw the diagram in 1992
S/4 d/4 upward 20 stim. 5 %
. 206 t/t/ha



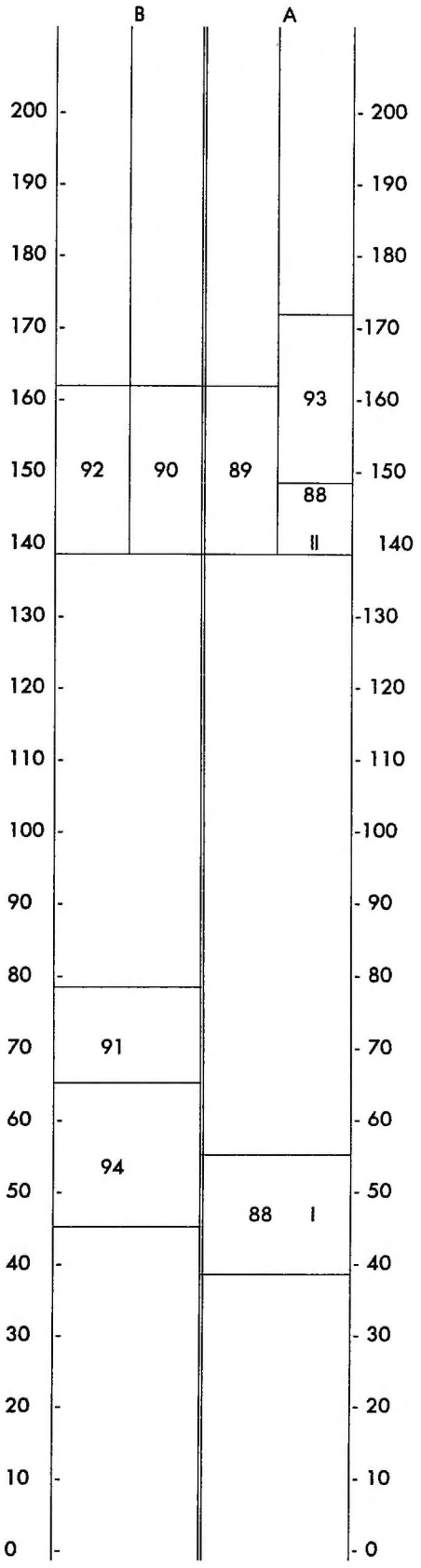
Year of Tapping	Tapping System	Production KG/HA
1982		2156
1983		1703
1984		2247
1985		1590
1986		2429
1987		1771
1988		1714
1989		1993
1990	1/4 S ↗ + 12 stim. 5 %	1518
1991	" 18 stim. 5 %	
1992	" 20 stim. 5 %	

Date of visit : 20/6/91
Name of the plantations : LIMA - PULUH
Block : 50 (associated blocks - 49 - 23 - 14 - 18)
area : 23
clone : GT 1
date of planting : 1970
date of opening :

Observations :

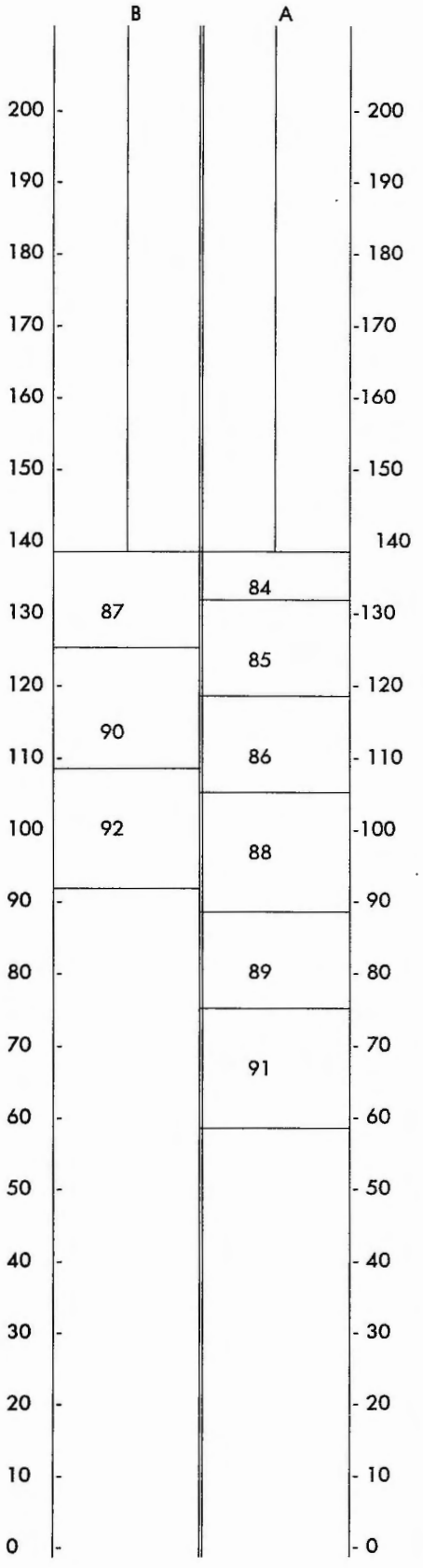
. Number of trees in tapping = 311

. Stimulation is to low in 90.
from July 91, increase to 10 stimulations
till the end of the year.
. 1992 follow diagram 20 stimulations at 5 %.



Year of Tapping	Tapping System	Production KG/HA
1982		2348
1983		1865
1984		1675
1985		2182
1986		1754
1987		1862
1988	S/2 d/4 ↘ 6m - S/4 d/4 ↗ 6m	2105
1989	S/4 d/4 ↗ 12 stim. 5 %	1550
1990	"	1496
1991	3/2 d/4 ↗ 18 stim. 5 %	
1992	" 20 stim. 5 %	

Date of visit : 20/6/91
Name of the plantations : LIMA - PULUH
Block : 10 ,(associated blocks : 23 - 47)
area : 37 ha
clone : GT 1
date of planting : 1979
date of opening : 1984



Observations :

. Before the storm of October 90, the number of tree in tapping was 421/t/t/ha
in 1991 the number of trees is : 272 t/t/ha
35 % of trees have been lost.

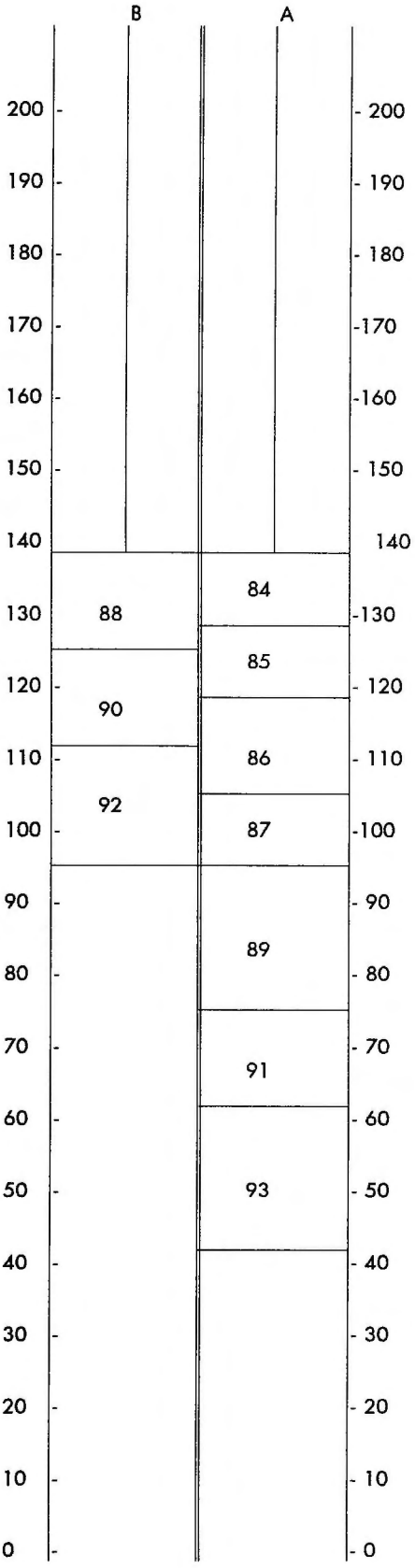
. follow diagram S/2 d/4 - 10 stim. 5 %

Year of Tapping	Tapping System	Production KG/HA
1984	.	236
1985		904
1986		1446
1987		1484
1988		1730
1989	1/2 S d/4 + 12stim. 2.5 %	1692
1990	1/2 S d/4 + 12 stim. 2.5 %	1942
1991	" + 10 stim. 5 %	
1992	1/2 d/4 + 10 stim. 5 %	

Date of visit : 20/6/91
Name of the plantations : LIMA - PULUH
Block : 47 (associated block 50)
area : 20 ha
clone : AV. 2037 (GT 1 22 ha - PR 107 18 ha)
date of planting : 1979
date of opening : 1984

Observations :

. number of trees in tapping 241 t/t/ha
. see diagram for 1992
12 stim. 5 %

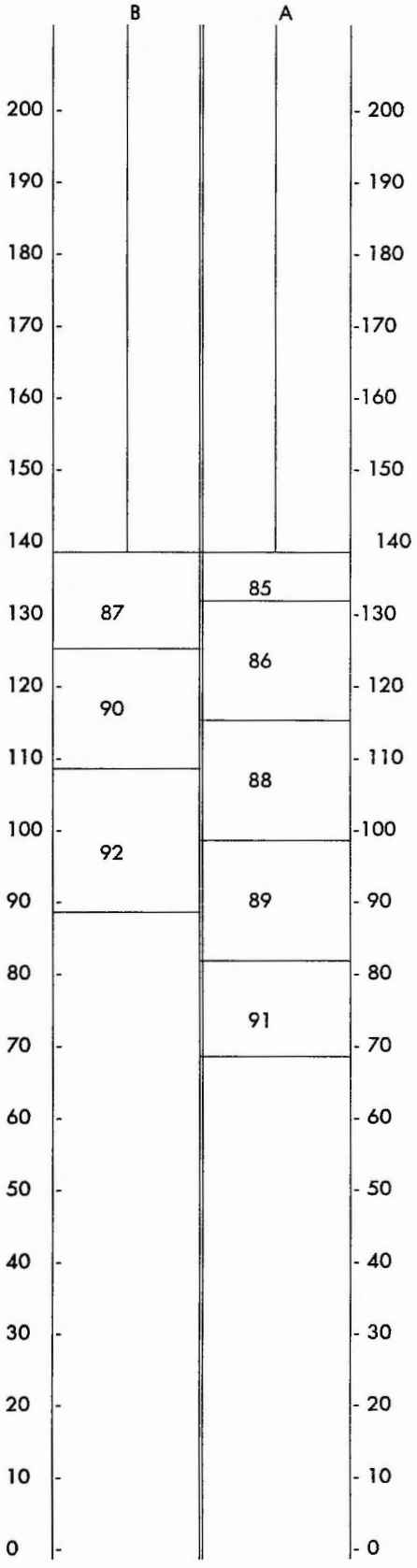


Year of Tapping	Tapping System	Production KG/HA
1984		179
1985		488
1986		730
1987		1086
1988	S/4 d/4 + 12 stim. 2.5 %	1247
1989	"	1027
1990	"	1108
1991	" 10 stim. 5 %	
1992	" 12 stim. 5 %	

Date of visit : 20/6/91
Name of the plantations : LIMA - PULUH
Block : 6 (associated blocks : 11 - 48)
area : 12 ha
clone : GT 1
date of planting : 1980
date of opening : 1985

Observations :

. Trees in tapping = 273 t/t/ha
. Block 11 (AVROS 2037) 12 stimulations at 5 %

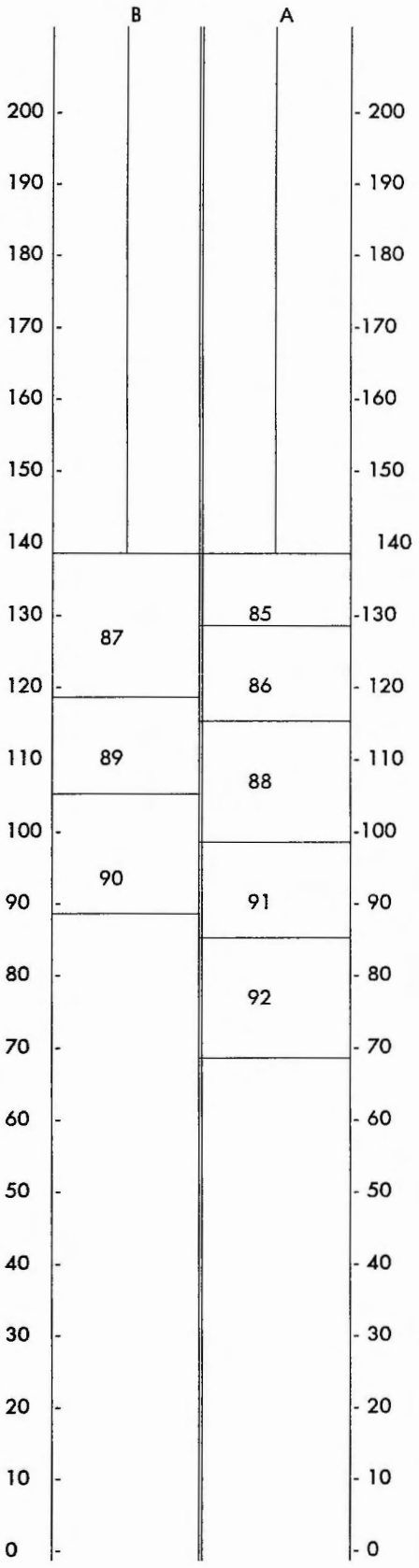


Year of Tapping	Tapping System	Production KG/HA
1985		807
1986		1246
1987		1569
1988		2136
1989		1855
1990	1/2 S d/4 + 12 stim. 2.5 %	2249
1991	" 10 stim. 5 %	
1992	" 10 stim. 5 %	

Date of visit : 20/6/91
Name of the plantations : LIMA - PULUH
Block : 34
area : 12 ha
clone : GT 1
date of planting : 1980
date of opening : 1985

Observations :

. The two tapping cuts 90 and 91are too narrow so, come down on the same panel in 1992.

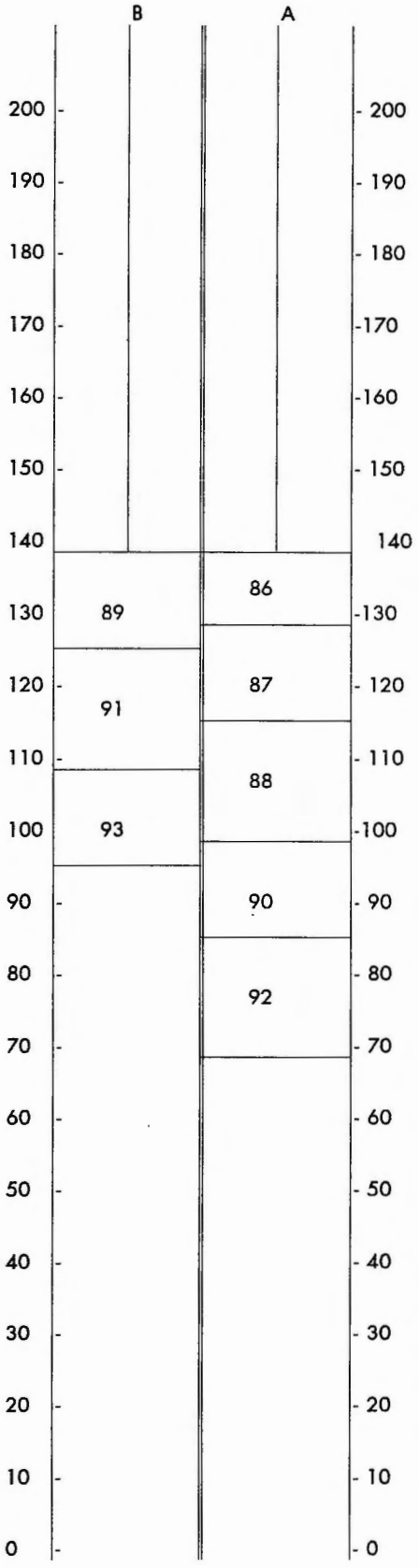


Year of Tapping	Tapping System	Production KG/HA
1985	S/4 d/4 + 4 stim. 2.5 %	509
1986	+ 8 "	908
1987	+ 10 "	1264
1988	+ 10 "	1414
1989	+ 12 "	2322
1990	+ 12 "	2082
1991	+ 10 stim. 5%	
1992	+ 10 stim. 5 %	

Date of visit : 20/6/91
Name of the plantations : LIMA - PULUH
Block : 24 (associated blocks : 25 - 27 - 29)
area : 25 ha
clone : AVROS 2037
date of planting : 1981
date of opening : 1986

Observations :

. number of trees in tapping 198 t/t/ha
. increase stimulation 14 stim. 5 %
. For blocks 25 - 27 - 29 GT 1 12 stim. 5 %

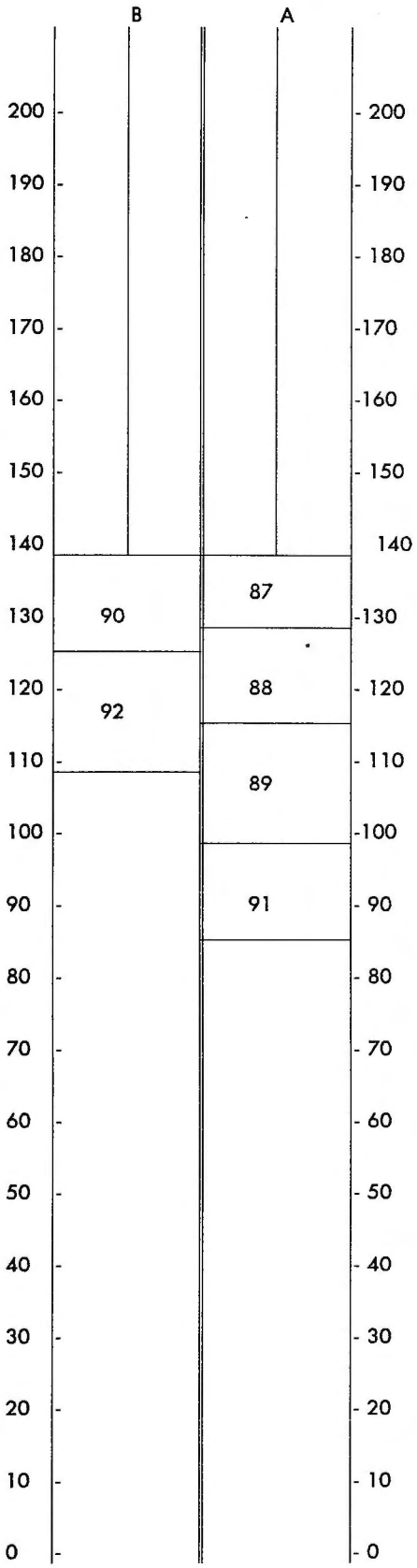


Year of Tapping	Tapping System	Production KG/HA
1986		273
1987		1033
1988		1389
1989		1466
1990	1/2 S d/4 + 9 stim. 5 %	1557
1991	" + 12 stim. 5 %	
1992	" + 14 stim. 5 %	

Date of visit : 20/6/91
Name of the plantations : LIMA - PULUH
Block : 17 (associated blocks : 5 A - 18 - 21-37)
area : 25 ha
clone : GT 1
date of planting : 1982
date of opening : 1987

Observations :

. Blocks 5A - 18 - 21 - 17 = 12 stim. 2.5 %
. Blocks 21 (PR 261) - 37 = 9 stim. 5 %
. Production is good except for block 18.

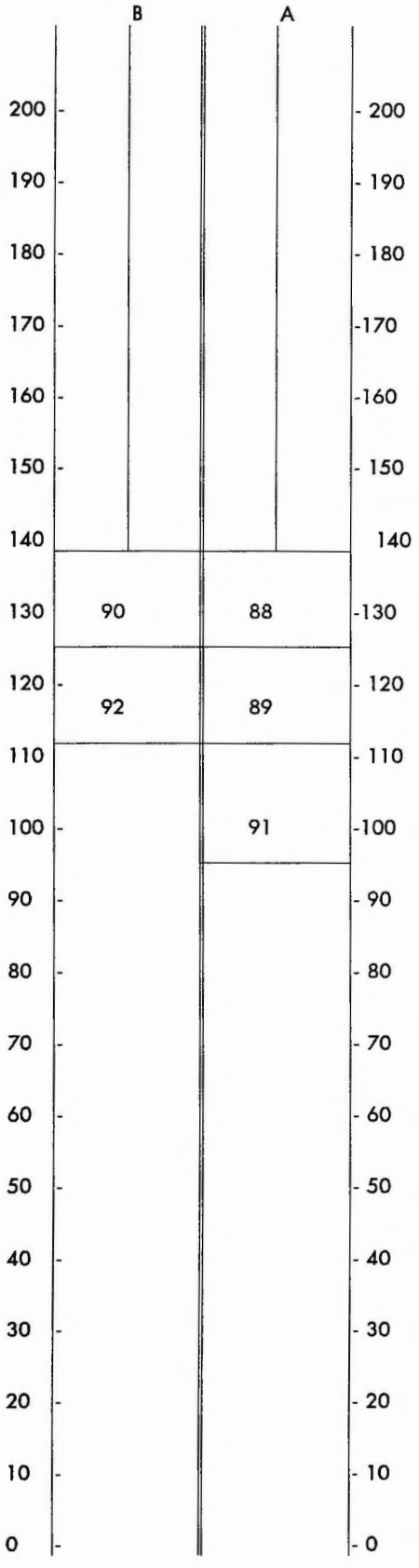


Year of Tapping	Tapping System	Production KG/HA
1987		438
1988		1181
1989		1507
1990	1/2 S d/4 + 12 stim. 2.5 %	1752
1991	"	
1992	"	

Date of visit : 20/6/91
Name of the plantations : LIMA - PULUH
Block : 39
area : 43 ha
clone : PB 235 (21 ha) - PB 260 (22 ha)
date of planting : 1983
date of opening : 1988

Observations :

. Level of production very good
. In 1992, only 5 stimulations at 2.5 %
. After the storm, the number of trees in tapping is :
PB 235 before : 349 after : 299 looses : 14 %
PB 260 before : 380 after : 298 looses : 22 %

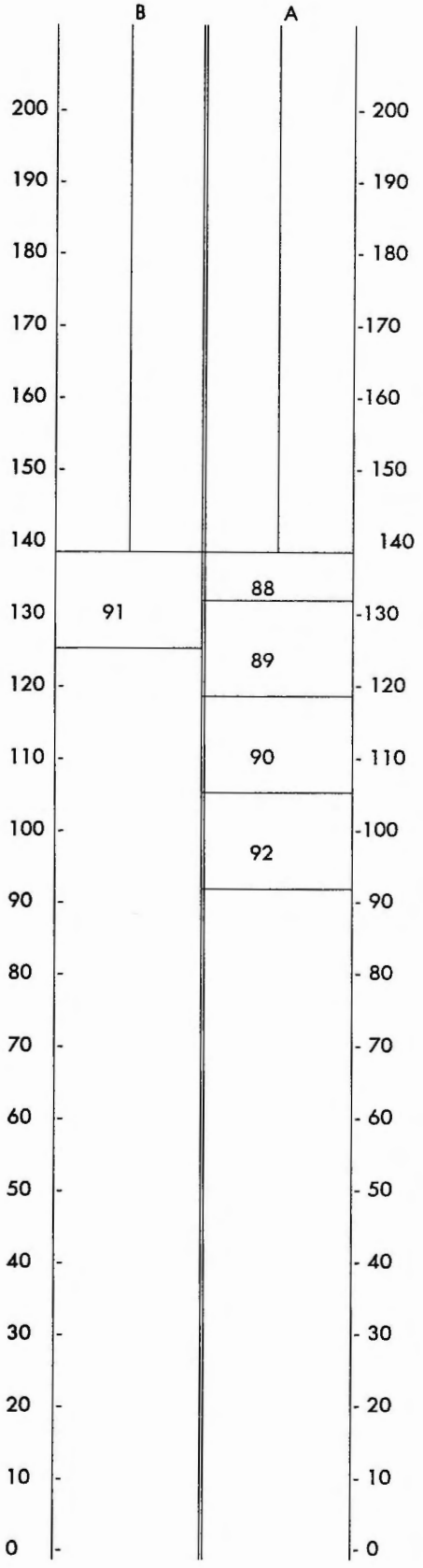


Year of Tapping	Tapping System	Production KG/HA
1988	1/2 S d/4 + 4 stim. 2.5 %	1170
1989	"	1676
1990	1/2 S d/4 + 4 stim. 2.5 %	1578
1991	" 5 stim. 2.5 %	
1992	" 5 stim. 2.5 %	

Date of visit : 20/6/91
Name of the plantations : LIMA - PULUH
Block : 40
area : 45 ha
clone : PR 255 (22 ha) - PR 261 (11 ha) - PB 5/51 (12 ha)
date of planting : 1983
date of opening : 1988

Observations :

. PB 5/51 = 5 stim. 2.5 %
. PR 261 and PR 255 = 8 stim. 5 %
be carefull the wounds
. follow the diagram
. level of production is good except for PR 255

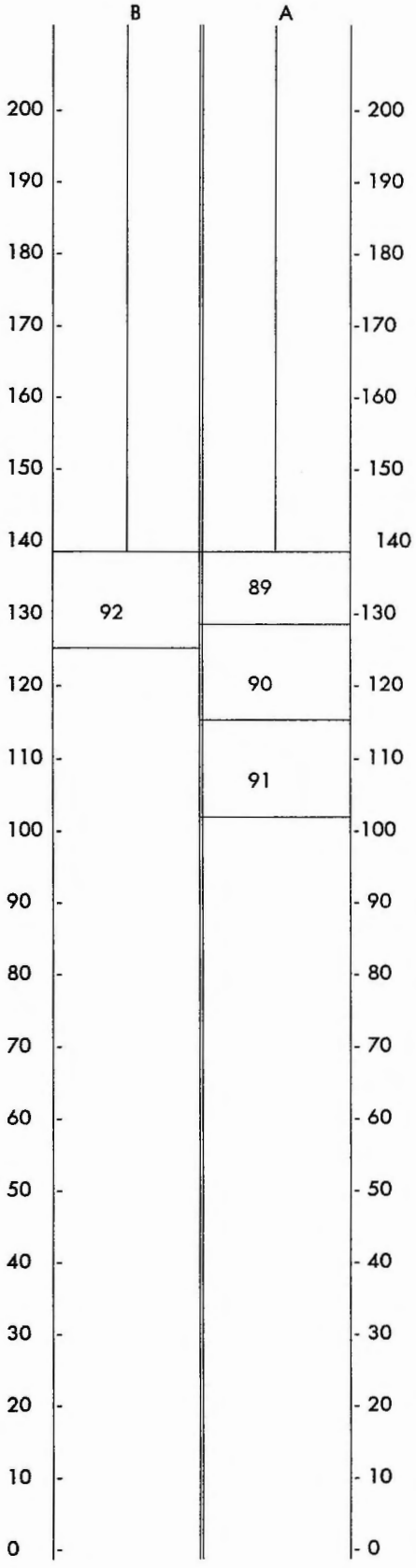


Year of Tapping	Tapping System	Production KG/HA
1988	S/2 d/4 + 4 stim. 2.5 %	862
1989	"	1079
1990	S/2 d/4 + 5 stim. 2.5 %	1329
1991		
1992		

Date of visit : 20/6/91
Name of the plantations : LIMA - PULUH
Block : 36 (associated blocks 37 - 38)
area : 56 ha
clone : PB 260 (28 ha) - PB 235 (30 ha)
date of planting : 1984
date of opening : 1989

Observations :

. very good level of production
. very small wind damage
. only 5 stimulations at 2.5 %

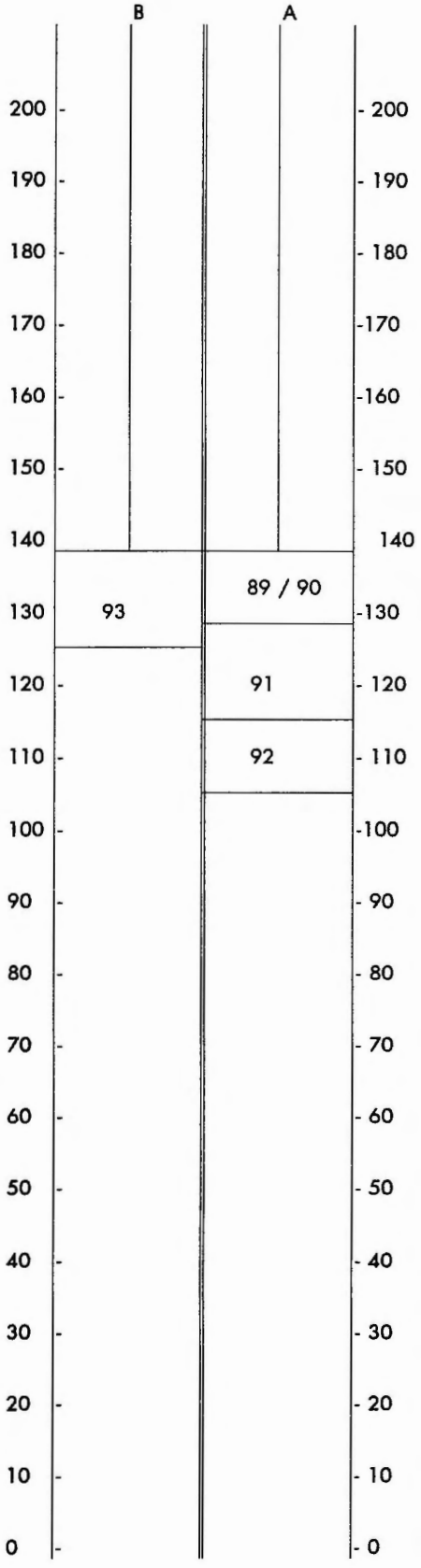


Year of Tapping	Tapping System	Production KG/HA
1989	1/2 S d/4 + 4 stim. 2.5 %	1108
1990	"	1463
1991	"	
1992	"	

Date of visit : 20/6/91
Name of the plantations : LIMA - PULUH
Block : 6 (PB 235 - 4 ha - BPM 24 - 7 ha)
area : 24 ha
clone : PR 261
date of planting : 1985
date of opening : 1990

Observations :

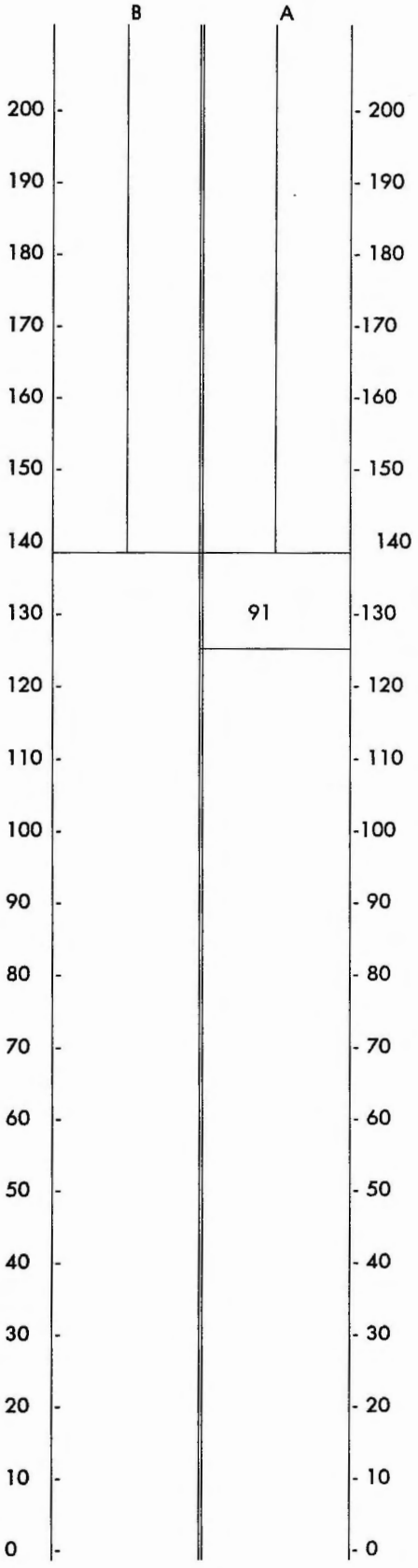
. See diagram
. PR 261 8 stim. 5 %
. PB 235 - BPM 24 5 stim. 2.5 %



Year of Tapping	Tapping System	Production KG/HA
1989	S/2 d/4	1108
1990	S/2 d/4	578
1991	"	
1992	"	

Date of visit : 20/6/91
Name of the plantations : LIMA - PULUH
Block : 28 (associated blocks 41 - 25)
area : 40 ha
clone : PB 260
date of planting : 1986
date of opening : 1991

Observations :



Year of Tapping	Tapping System	Production KG/HA

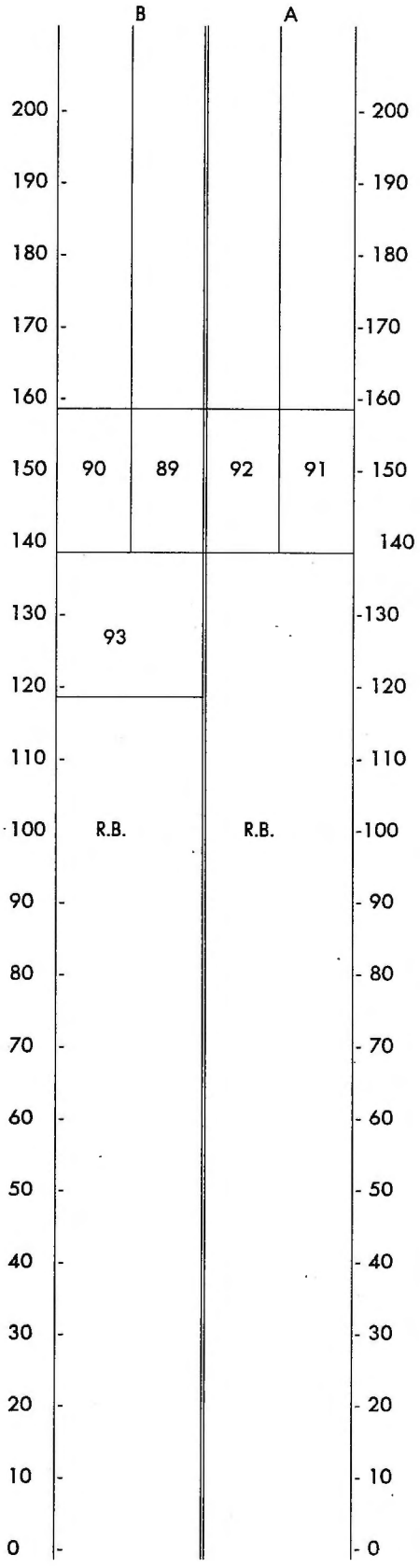
LIMA - PULUH (LIDAH - TANAH)

Visited blocks	Associated blocks	Planting year /clone	Tapping system and stimulation 1992	a.i. mg/t/year
11		**1971**		
	4	GT 1	S/4 ↗ 18 stim. 5 %	360
	1 - 2 - 3 - 5	AVROS 2037	S/4 ↗ 24 stim. 5 %	480
7		**1972**		
	7 - 9	GT 1	S/4 ↗ 18 stim. 5 %	360
	5 - 6 - 8 - 10	AVROS 2037	S/4 ↗ 24 stim. 5 %	480

Date of visit : 20/6/91
Name of the plantations : LIMA - PULUH (Lidah-Tanah)
Block : 11 (associated blocks - 5 - 4 - 3 - 2 1)
area : 26 ha
clone : GT 1 (blocks 11 - 4) - AVROS 2037 (blocks 5 - 3 - 2 - 1)
date of planting : 1971
date of opening :

Observations :

. Too many wounds
. be careful to well manage the S/4 ↗
. Stimulation must increase from July 1991 as following :
GT 1 : blocks 4 - 11 18 stim. 5 %
AVROS : blocks 1 - 2 - 3 - 5 24 stim. 5 %

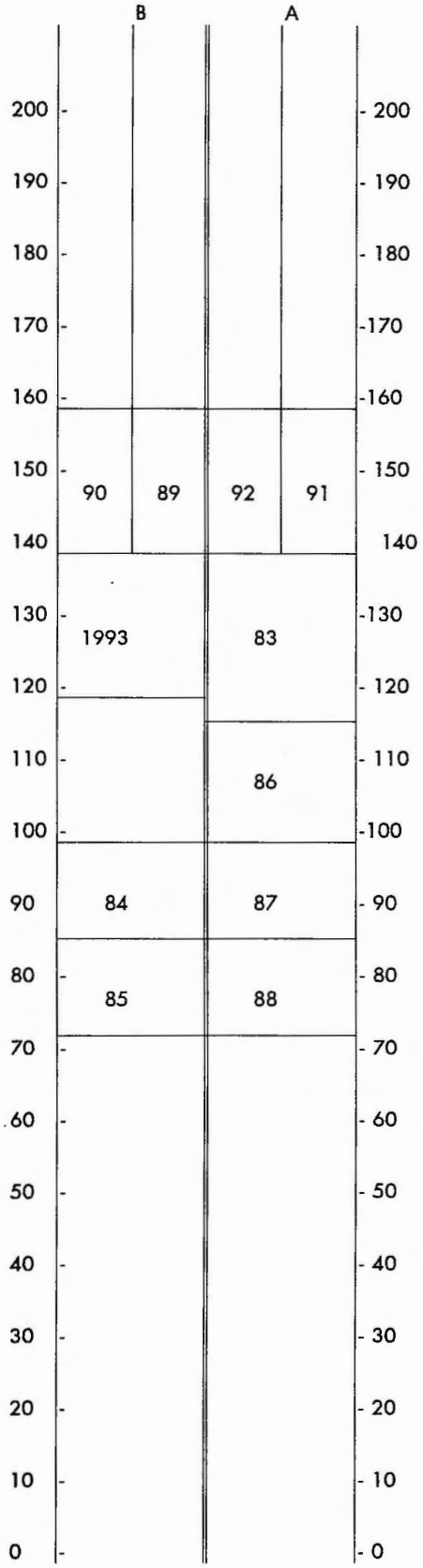


Year of Tapping	Tapping System	Production KG/HA
1979		244
1980		631
1981		1130
1982		1152
1983		1344
1984		1393
1985		1469
1986		1326
1987		1582
1988	S/2 d/4	1529
1989	S/4 d/4 / + 12 stim. 5%	1582
1990	"	1172
1991	"	
1992	" 18 or 24 stim. 5 %	

Date of visit : 20/6/91
Name of the plantations : LIMA - PULUH (Lidah-Tanah)
Block : 7 (associated blocks - 5 - 6 - 8 - 9 - 10)
area : 20 ha
clone : GT 1
date of planting : 1972
date of opening :

Observations :

. reduce the number of wounds.
. 1992 S/4 upward as shown in the diagram.
. Stimulations :
GT 1 : blocks 7 - 9 = 18 stimulations 5 %
AVROS 2037 : blocks 5 - 6 - 8 - 10 = 24 stim. 5 %



Year of Tapping	Tapping System	Production KG/HA
1982		2031
1983		1797
1984		1750
1985		1907
1986		1601
1987		1750
1988		1605
1989		2614
1990	1/4 S d/4 = 12 stim. 5 %	2035
1991	" 18 "	
1992	" 18 or 24 "	

2.4. TANAH BESIH

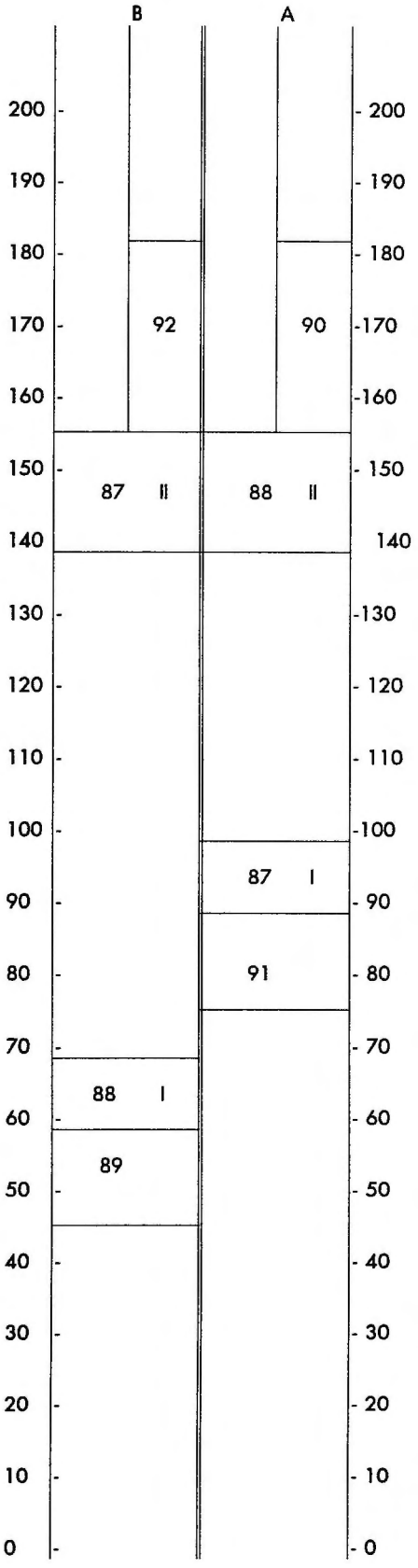
- Area tapped in 1990 : 971 ha
- Area being tapped in 1991 : 1,058 ha
- Average production per ha : 1,645 kg
- Increase in production per ha 1989/1990 : + 6.4%
- The comments on the number of trees being tapped are as follows:
  - For plantings aged over 10 years, the number of trees being tapped varies from 222 to 393.
  - For plantings aged 10 years and under, the number of trees being tapped varies from 309 to 386.
- Production levels are satisfactory on the whole, apart from blocks 24, 40, 5, 31, 22, 26 and 32 for which production ought to increase.
- The tapping system recommendations for 1992 are given in the following tables and diagrams.

TANAH - BESIH

Visited blocks	Associated blocks	Planting year /clone	Tapping system and stimulation 1992	a.i. mg/t/year
35	33 - 36 - 37	**1969** GT 1	S/4 ↗ d/4 + 20 stim. 5 %	400
39	30	**1977** Polyclones	S/4 ↗ d/4 + 20 stim. 5 %	400
10	30	**1978** GT 1	S/2 ↘ d/4 + 12 stim. 5 %	480
	7 - 8 - 38	PR 107 - AVROS	S/2 ↘ d/4 + 14 stim. 5 %	560
2	24 - 25	**1979** Group AVROS	S/2 ↘ d/4 + 14 stim. 5 %	560
	6 - 1	GT 1	S/2 ↘ d/4 + 12 stim. 5 %	480
34	part of 29	**1980** GT 1	S/2 ↘ d/4 + 10 stim. 5%	400
	40 - 29	Group AVROS	S/2 ↘ d/4 + 12 stim. 5 %	480
31	-	**1981** GT 1	S/2 ↘ d/4 + 10 stim. 5 %	400
5	-	**1981** AV 2037	S/2 ↘ d/4 + 12 stim. 5 %	480
26	32 - 22	**1982** GT 1	S/2 ↘ d/4 + 12 stim. 2.5 %	240
	part 26	AVROS	S/2 ↘ d/4 + 9 stim. 5 %	360
21	20	**1983** GT 1	S/2 ↘ d/4 + 12 stim. 2.5 %	240
	27	PR 261 - 255	S/2 ↘ d/4 + 9 stim. 5 %	360
19	18	**1984** PB 235 - 260	S/2 ↘ d/4 + 4 stim. 2.5 %	60
	18	PR 261 - 255	S/2 ↘ d/4 + 8 stim. 5 %	280
15	9	**1985** PB 235 - 260	S/2 ↘ d/4 + 4 stim. 2.5 %	60

Date of visit : 17/6/91
Name of the plantations : TANAH - BESIH
Block : 35 (associated blocks - 36 - 37 - 33)
area : 39 ha
clone : GT 1
date of planting : 1968
date of opening :

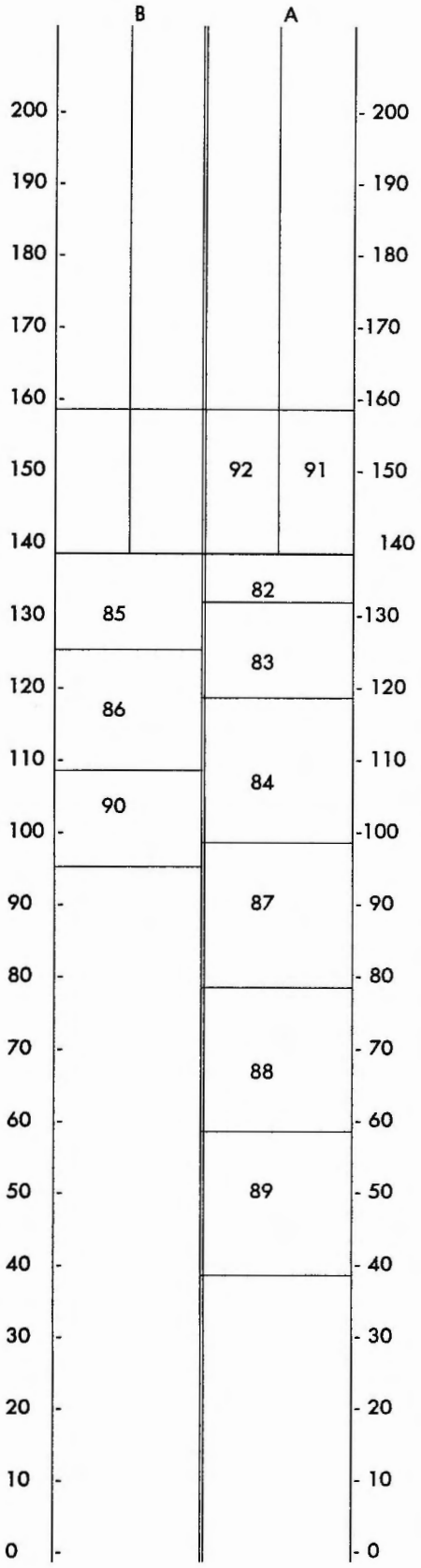
Observations :
. this block will be replanted in 1994 so,
the tapping will be stopped on June 93.
. stimulation intensity must be increased to 20 for 1992
. see the diagram S/4 upward + 20 stim. 5 %



Year of Tapping	Tapping System	Production KG/HA
1979		788
1980		1372
1981		2060
1982		1852
1983		1445
1984		1916
1985		1905
1986		2223
1987		2073
1988		2041
1989		1295
1990	1/4 S 7 + 12 stim. 5 %	1385
1991	S/2 ↘ d/4 + 14 stim. 5 %	
1992	1/4 ↗ + 20 stim. 5 %	

Date of visit : 17/6/91
Name of the plantations : TANAH - BESIH
Block : 39 (associated block : 30)
area : 58 ha
clone : GT 1 : 35 ha - PR 107 : 15ha - RISPA : 8 ha
date of planting : 1977
date of opening :

Observations :
. according to the number of trees in tapping the production is good
. increase the stimulation at 15 in 1991
. in 1992 S/4 d/4 as shown on the diagram + 20 stim. 5 %

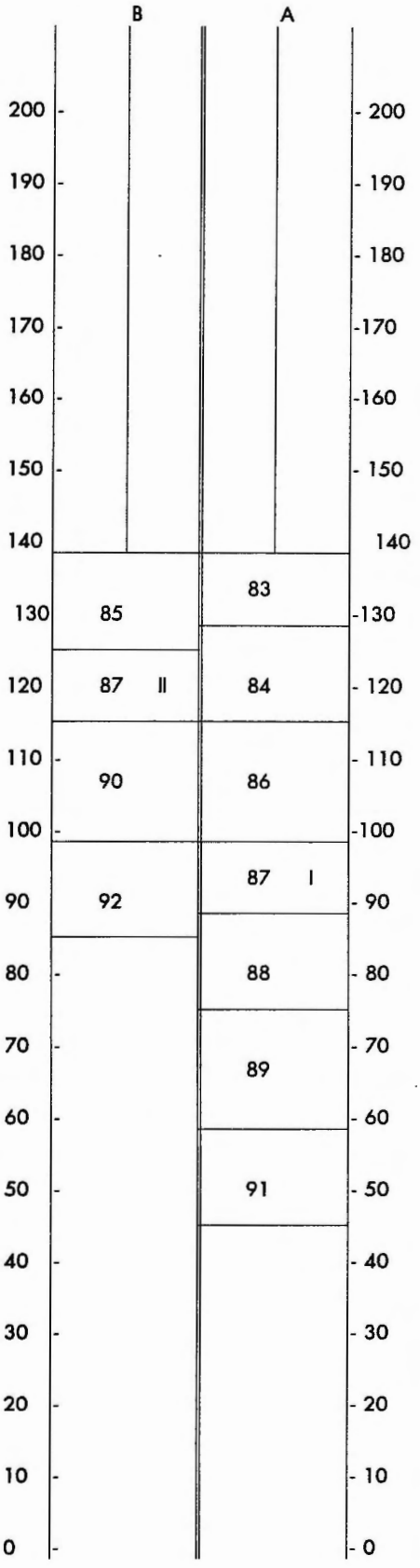


Year of Tapping	Tapping System	Production KG/HA
1982		543
1983		835
1984		809
1985		1313
1986		1334
1987		1366
1988		1622
1989		1797
1990	1/2 S + 12 stim. 5 %	2197
1991	1/4 S ↗ + 15 stim. 5 %	
1992	" + 20 stim. 5 %	

Date of visit : 17/6/91
Name of the plantations : TANAH - BESIH
Block : 10 (associated blocks : 7 - 8 - 30 - 38)
area : 43.5 ha
clone : GT 1
date of planting : 1978
date of opening : 1983

Observations :
. blocks 10 - 30 - GT 1 = 12 stim. 5 %
. blocks 38 - PR 107 = 12 stim. 5 %
. blocks 7 - 8 - AV 2937 = 14 stim. 5 %

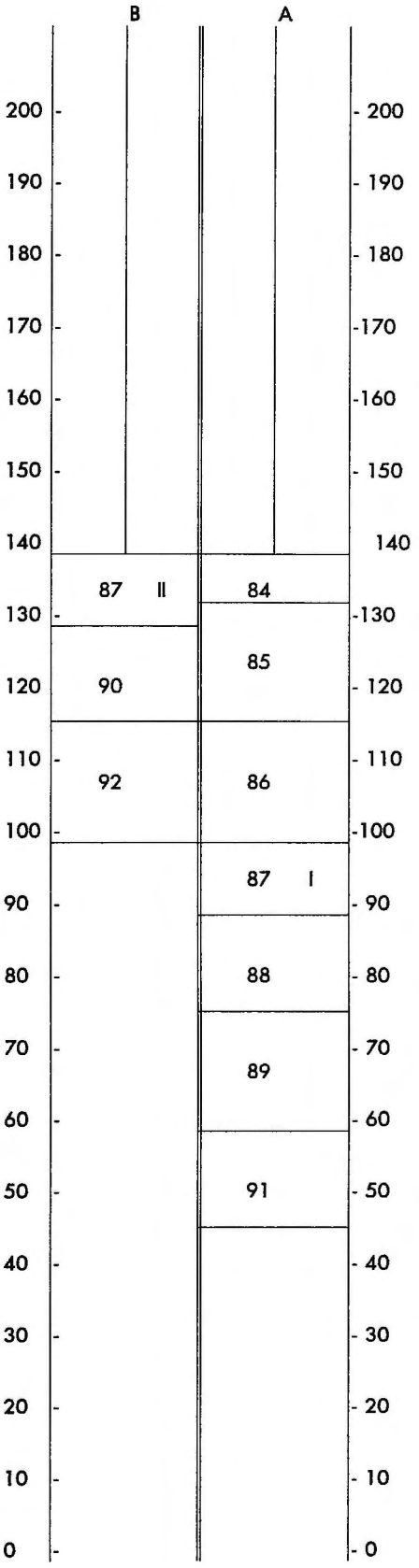
. the level of production of blocks 8 and 38 must increase.



Year of Tapping	Tapping System	Production KG/HA
1983		415
1984		823
1985		1168
1986		1379
1987		1461
1988		1586
1989		1632
1990	1/2 S + 10 stim. 5 %	2527
1991	" + 12 stim. 5 %	
1992	"	

Date of visit : 17/6/91
Name of the plantations : TANAH - BESIH
Block : 2 (associated blocks : 6 - 1 - 24 - 25)
area : 30.5 ha
clone : AVROS 2037
date of planting : 1979
date of opening : 1984

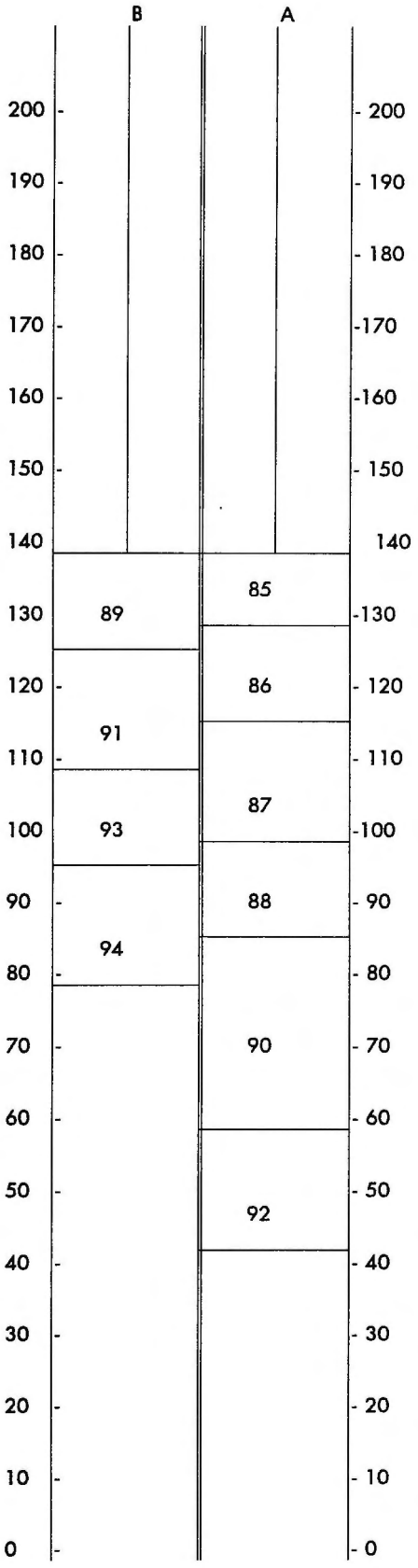
Observations :
. blocks 1 and 6 GT 1 follow the evolution of the leaves fall.
. better control of the depth of tapping.
. blocks 2 - 24 - 25 = 14 stim. 5 %
. blocks 6 and 1 = 12 stim. 5 %



Year of Tapping	Tapping System	Production KG/HA
1984	[illegible] 2	246
1985	6	636
1986	6	701
1987	10 4,5	831
1988		1323
1989	9 5%	1664
1990	1/2 S d/4 + 12 stimulations 5 %	1774
1991	" "	
1992	" 12 or 14	

Date of visit : 17/6/91
Name of the plantations : TANAH - BESIH
Block : 34 (associated blocks : 29 - 40)
area : 39 ha
clone : GT 1
date of planting : 1980
date of opening : 1985

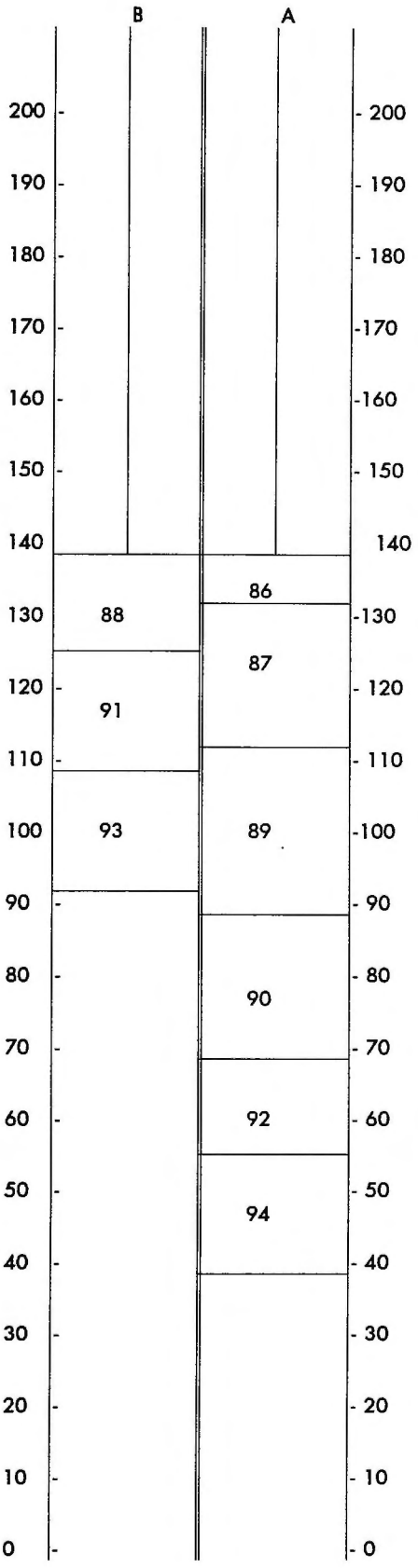
Observations :
. follow the evolution of leaves fall.
. 1992 see the diagram S/2 d/4 downward.
. blocks 34 and part 29 GT 1 = 10 stim. 5 %
. blocks 40 - 29 groupe AVROS 2037 = 12 stim. 5 %



Year of Tapping	Tapping System	Production KG/HA
1985		490
1986		946
1987		958
1988		1205
1989		1951
1990	1/2 S d/4 + 12 stim. 2.5 %	1552
1991	10 stim. 5 %	
1992	10 stim. 5 %	

Date of visit : 17/6/91
Name of the plantations : TANAH - BESIH
Block : 31
area : 60 ha
clone : GT 1
date of planting : 1981
date of opening : 1986

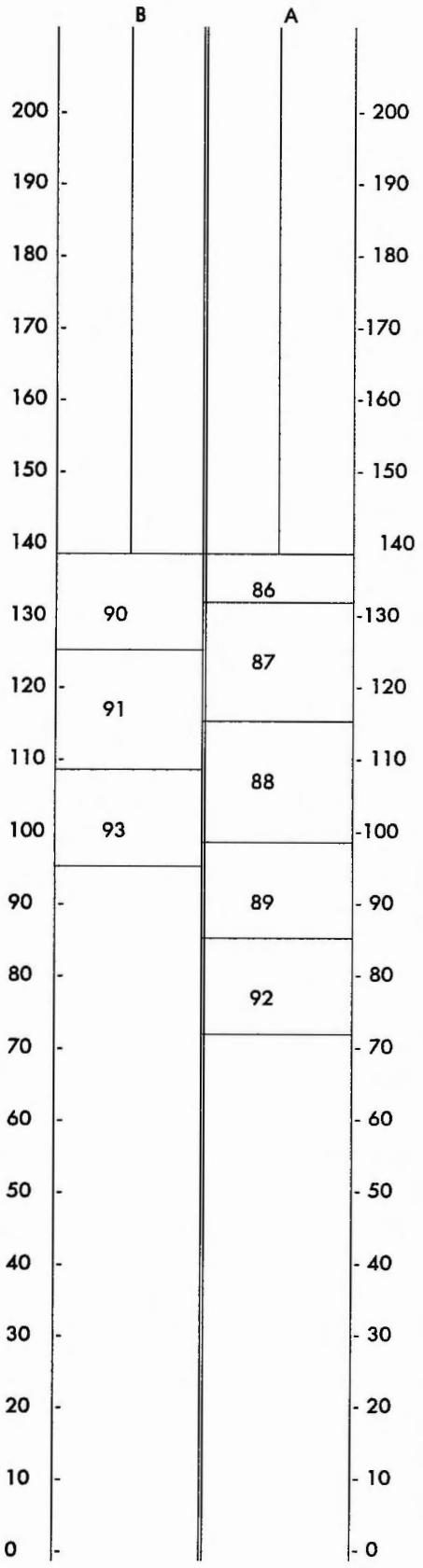
Observations :
. the production of this block is too low
. increase the stimulation at 10 in 1992 at 5 %.



Year of Tapping	Tapping System	Production KG/HA
1986		596
1987		767
1988		1063
1989		1310
1990	1/2 S d/4 + 12 stim. 2.5 %	1321
1991	+ 12 stim. 2.5 %	
1992	+ 10 stim. 5 %	

Date of visit : 17/6/91
Name of the plantations : TANAH - BESIH
Block : 5
area : 31 ha
clone : AVROS 2037
date of planting : 1981
date of opening : 1986

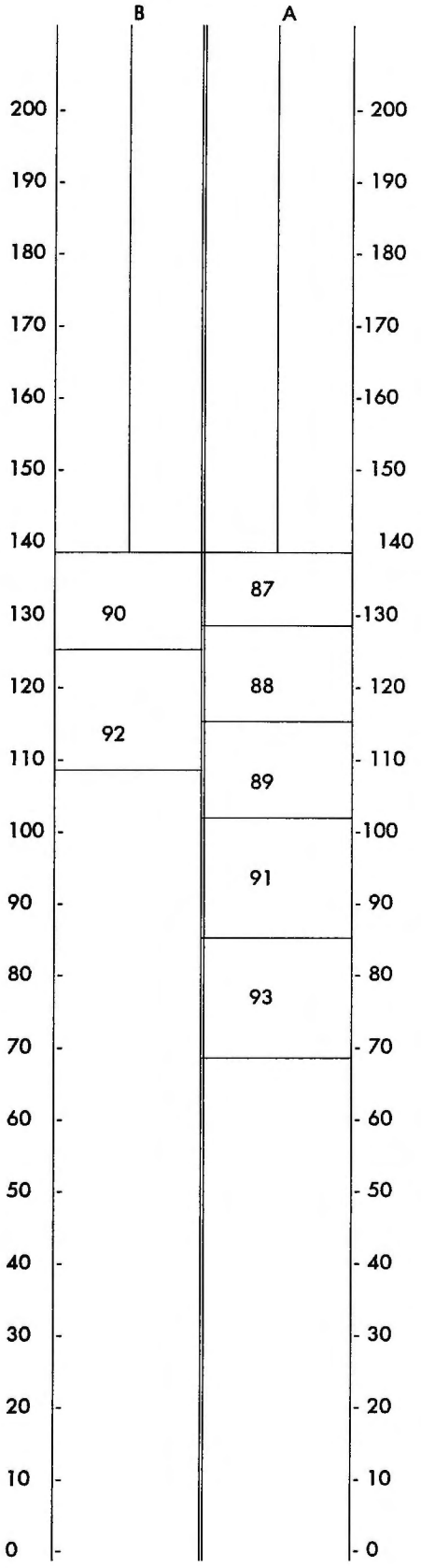
Observations :
. the production of this block must increase
. in 1992 = 12 stimulations at 5 %



Year of Tapping	Tapping System	Production KG/HA
1986		342
1987		664
1988		1119
1989		1433
1990	1/2 S d/4 = 9 stim. 5 %	1352
1991	+ 10 stim. 5 %	
1992	+ 12 stim. 5 %	

Date of visit : 17/6/91
Name of the plantations : TANAH - BESIH
Block : 26 (associated blocks : 22 - 32)
area : 38.5 ha
clone : GT 1 : 13.5 ha - AVROS 2037 : 25 ha
date of planting : 1982
date of opening : 1987

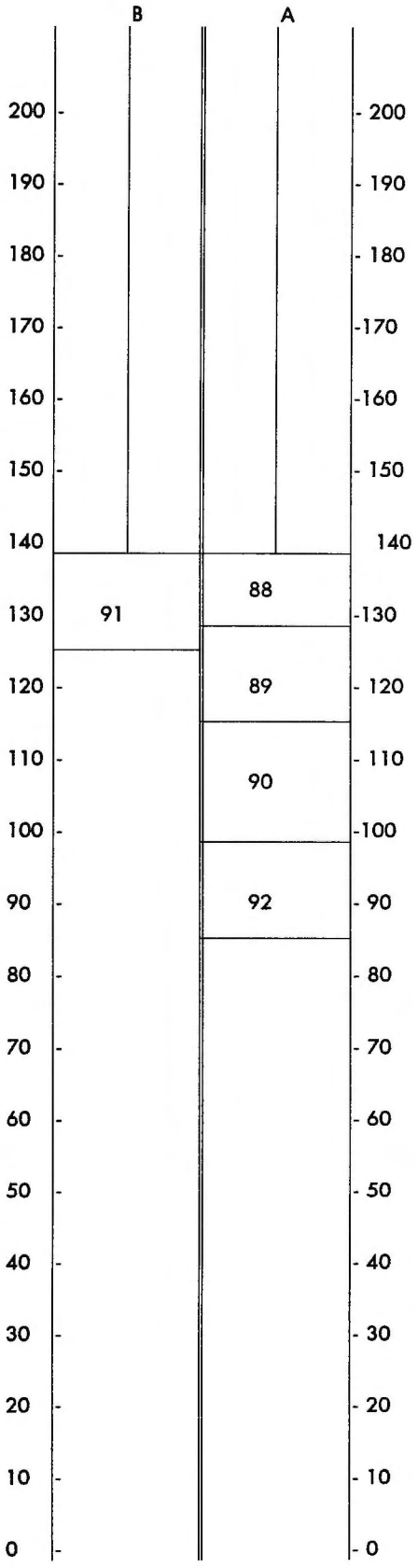
Observations :
. production of these blocks increase slowly.
. follow the diagram and normal stimulation
. blocks 26 part, 32, 22 = 12 stim. 2.5 %
. blocks 26 part AVROS = 9 stim. 5 %



Year of Tapping	Tapping System	Production KG/HA
1987		283
1988		804
1989		1319
1990	1/2 S d/4 + 12 stim. 2.5 %	1450
1991		
1992	12 stim. 2.5 %	

Date of visit : 17/6/91
Name of the plantations : TANAH - BESIH
Block : 21 (associated blocks : 27 - 20)
area : 40 ha
clone : GT 1
date of planting : 1983
date of opening : 1988

Observations :
. blocks 21 - 20 GT 1 = 12 stim. 2.5 %
. blocks 27 PR 261 - 255 = 9 stim. 5%

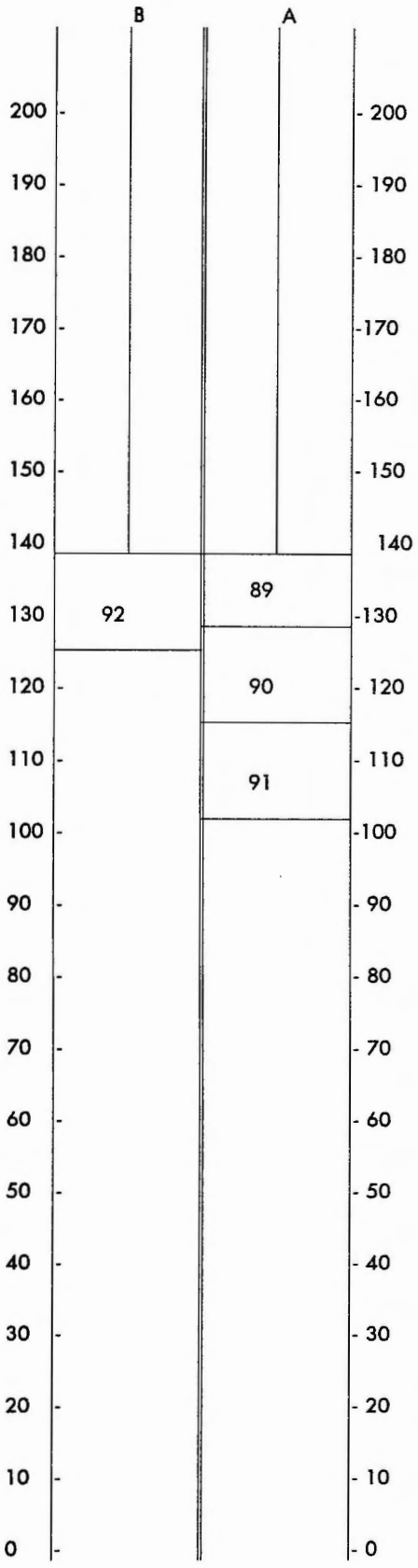


Year of Tapping	Tapping System	Production KG/HA
1988		559
1989		902
1990	1/2 S d/4 + 10 stim. 2.5 %	1091
1991	"	
1992	+ 12 stim. 2.5 %	

Date of visit : 17/6/91
Name of the plantations : TANAH - BESIH
Block : 19 (associated block 18)
area : 41
clone : PB 235 - 260
date of planting : 1984
date of opening : July 1989

Observations :

. clones PB 235 and 260
. clones PR 261 and PR 255 = 8 stim. at5 %

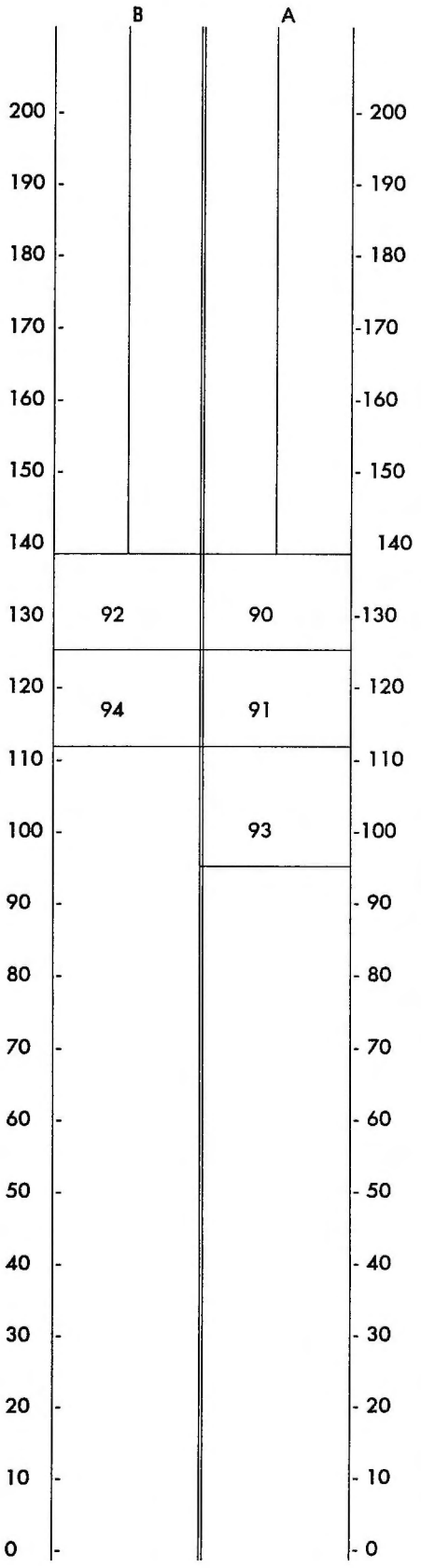


Year of Tapping	Tapping System	Production KG/HA
July 1989	1/2 S d/4 + 2 stim. 2.5 %	1128
1990	1/2 S d/4 + 4 stim. 2.5 %	1305
1991	1/2 S d/4 + 4 stim. 2.5 %	
1992	1/2 S d/4 + 4 stim. 2.5 %	

Date of visit : 17/6/91
Name of the plantations : TANAH - BESIH
Block : 15 (associated block 9)
area : 38 ha
clone : PB 235
date of planting : 1985
date of opening : 1/90

Observations :

. good production the first year of tapping
. 1992 only 4 stim. 2.5 %



Year of Tapping	Tapping System	Production KG/HA
1990	1/2 d/4 + 4 stim. 2.5 %	1187
1991	1/2 d/4 + 3-4 stim. 2.5 %	
1992	1/2 d/4 + 3-4 stim. 2.5 %	

2.5. TANJUNG MARIA

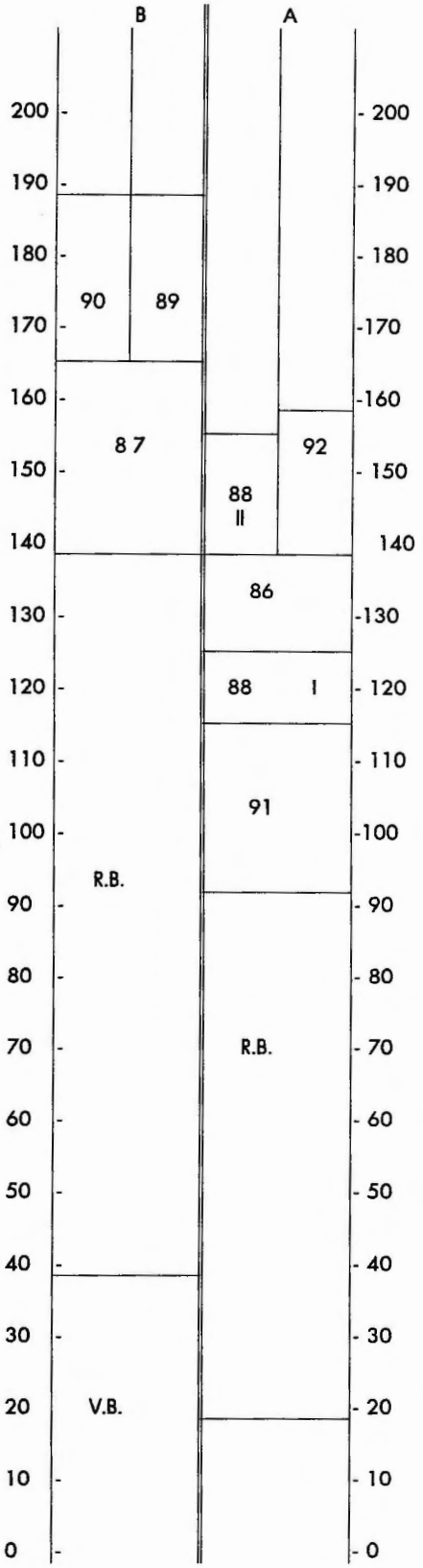
- Area tapped in 1990 : 831 ha
- Area being tapped in 1991 : 911 ha
- Average production per ha : 1,659 kg
- Increase in production per ha 1989/1990 : + 5.2%
- The comments on the number of trees being tapped are as follows:
  - For plantings aged 20 years, the number of trees being tapped per hectare varies from 225 to 381.
  - For plantings aged 11 years and under, the number of trees being tapped per hectare varies from 239 to 434.
- Production levels are satisfactory on the whole, apart from blocks 17, 22, 19 and 20, where production ought to increase.
- Block 17 has been chosen for setting up a new tapping trial, replacing the trial at Lima-Pulah which was halted due to wind-damaged trees (October 1990). The trial procedure is given in the annex.
- The tapping system recommendations for 1992 are given in the following tables and diagrams.

TANJUNG - MARIA

Visited blocks	Associated blocks	Planting year /clone	Tapping system and stimulation 1992	a.i. mg/t/year
20	22	**69/70** GT 1	S/4 ↗ d/4 + 20 stim. 5 %	400
21	-	**69/70** GT 1	"	400
19	-	**68/70** GT 1	S/4 ↗ d/4 + 20 stim. 5 %	400
		AVROS	S/4 ↗ d/4 + 24 stim. 5 %	480
1	2	**1970** GT 1	S/4 ↗ d/4 + 20 stim. 5 %	400
26	25	**1971** GT 1	S/4 ↗ d/4 + 20 stim. 5 %	400
17	18	**1980** GT 1	S/2 d/4 ↘ + 10 stim. 5 %	400
	18 - 13	AV 2037	S/2 d/4 ↘ + 14 stim. 5 %	560
7	-	**1981** GT 1	S/2 d/4 ↘ + 10 stim. 5 %	400
5	-	**1984** PB 235-260	S/2 d/4 ↘ + 4 stim. 2.5 %	60
		GT 1	" + 10 stim. 2.5 %	175
		PR 261-255	" + 8 stim. 5 %	280
4	7	**1985** PB 235-260	S/2 d/4 + 4 stim. 2.5 %	60
3	-	**1986** PB 235-260	S/2 d/4 + 3 stim. 2.5 %	45

Date of visit : 21/6/91
Name of the plantations : TANJUNG - MARIA
Block : 20 (associated blocks : 22)
area : 89 ha
clone : GT1
date of planting : 69/70
date of opening :

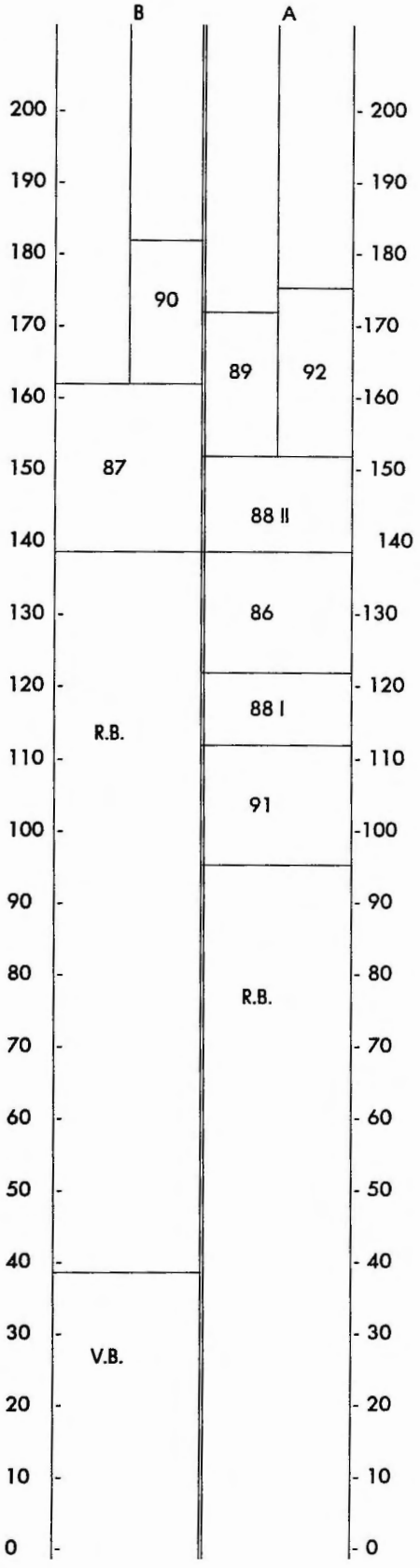
observations :
. from July to december 1991 : 9 stim. at 5 %
. increase the bark consomption in 1991
only 6 cm during the 1st 6 months
. 1992 S/4upward + 20 stim. 5 %



Year of Tapping	Tapping System	Production KG/HA
1981		1311
1982		1537
1983		1371
1984		1540
1985		1431
1986		1538
1987		2066
1988		1721
1989	S/4 ↗ d/4 10 stim 5 %	1407
1990	S/4 ↗ d/4 10 to 12 stim 5 %	1426
1991	S/2 d/4 "	
1992	S/4 ↗ + 20 stim. 5 %	

Date of visit : 21/6/91
Name of the plantations : TANJUNG MARIA
Block : 21
area : 41 ha
clone : GT 1
date of planting : 69/70
date of opening :

Observations :
. from July to December 91 apply 9 stim. at 5 %
. increase the bark consomption in 91
. 1992, come back in S/4 upward and apply 20 stim. at 5 %

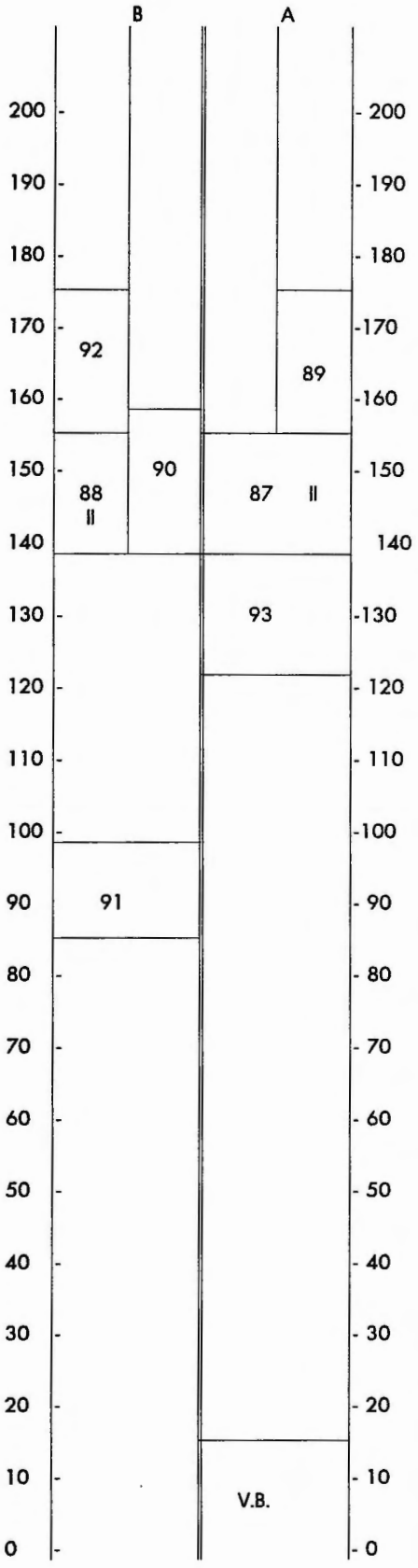


Year of Tapping	Tapping System	Production KG/HA
-	-	-
1986	S/2 ↘ d/4	1510
1987	S/2 ↗ d/4	2059
1988	S/2 ↗ ↙	1851
1989	S/4 ↗	1566
1990	S/4 ↗	1641
1991	S/2 ↘	
1992	S/4 ↗ + 20 stim.	

Date of visit : 21/6/91
Name of the plantations : TANJUNG - MARIA
Block : 19
area : 62 ha
clone : AVROS 2037 and GT 1
date of planting : 68/70
date of opening :

Observations :

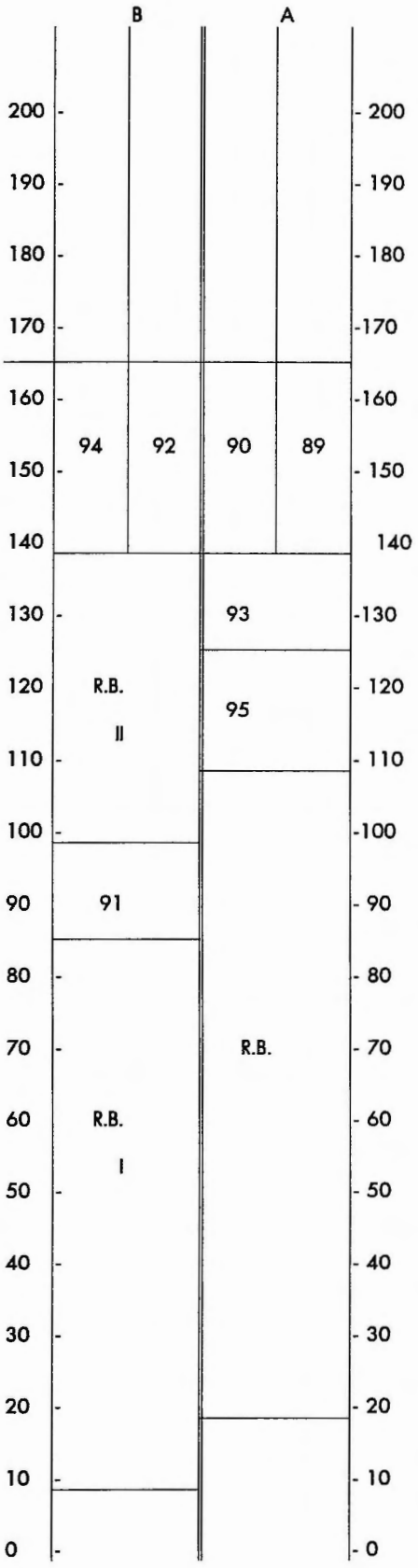
. GT 1 from July 91 to December 91 - 9 stim. 5 %
. AVROS 2937 from July 91 to December 91 - 11 stim. 5 %
. increase bark consomption in 1991
. 1992 - GT 1 S/4 upward - 20 stim. 5 %
AVROS S/4 upward - 24 stim. 5 %



Year of Tapping	Tapping System	Production KG/HA
1981		1349
1982		1412
1983		1354
1984		1407
1985		1252
1986		1385
1987		1809
1988		1368
1989		1116
1990	1/4 S / d/4 + 18 stim.	1360
1991	S/2 d/4 + 14 stim. 5 %	
1992	S/4 / + 20 - 24 stim. 5 %	

Date of visit : 21/6/91
Name of the plantations : TANJUNG - MARIA
Block : 1 (associated block 2)
area : 61 ha
clone : GT1
date of planting : 1970
date of opening :

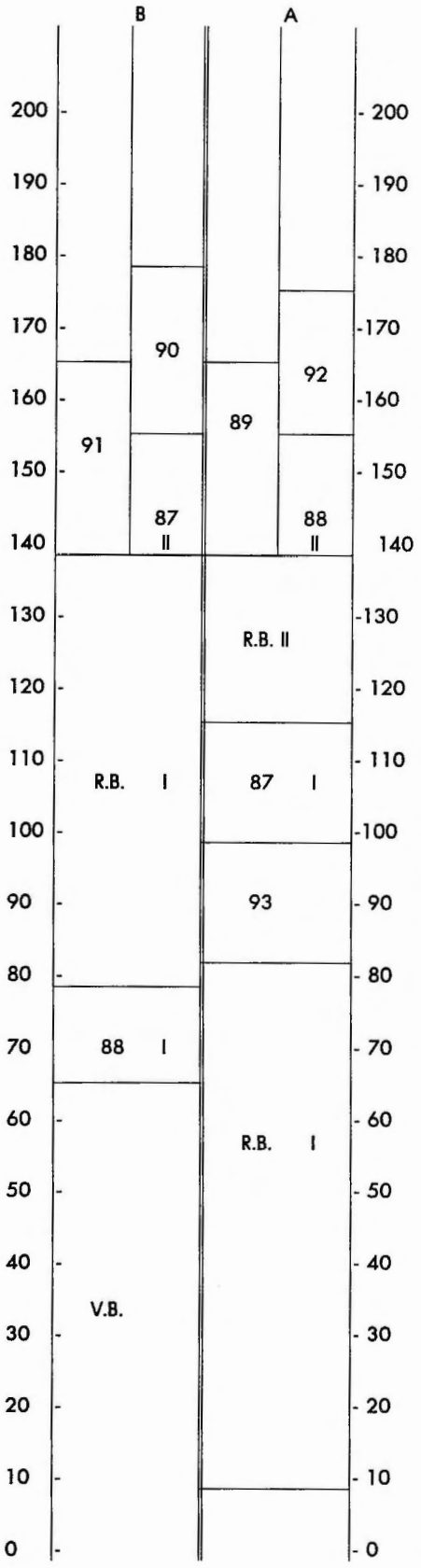
Observations :
. from July 1991 to December 1991 - apply 9 stim. at 5 %
. 1992 S/4 upward apply 20 stim. at 5 %



Year of Tapping	Tapping System	Production KG/HA
1981		1405
1982		1504
1983		1414
1984		2004
1985		1845
1986		1745
1987		1772
1988		1941
1989		2107
1990	1/4 S / d/4 + 13 stim. 5 %	1983
1991	S/2 d/4 + 12 stim. 5 %	
1992	1/4 S ↗ d/4 + 18 stim. 5 %	

Date of visit : 21/6/91
Name of the plantations : TANJUNG - MARIA
Block : 26 (associated block 25)
area : 84 ha
clone : GT 1
date of planting : 1971
date of opening :

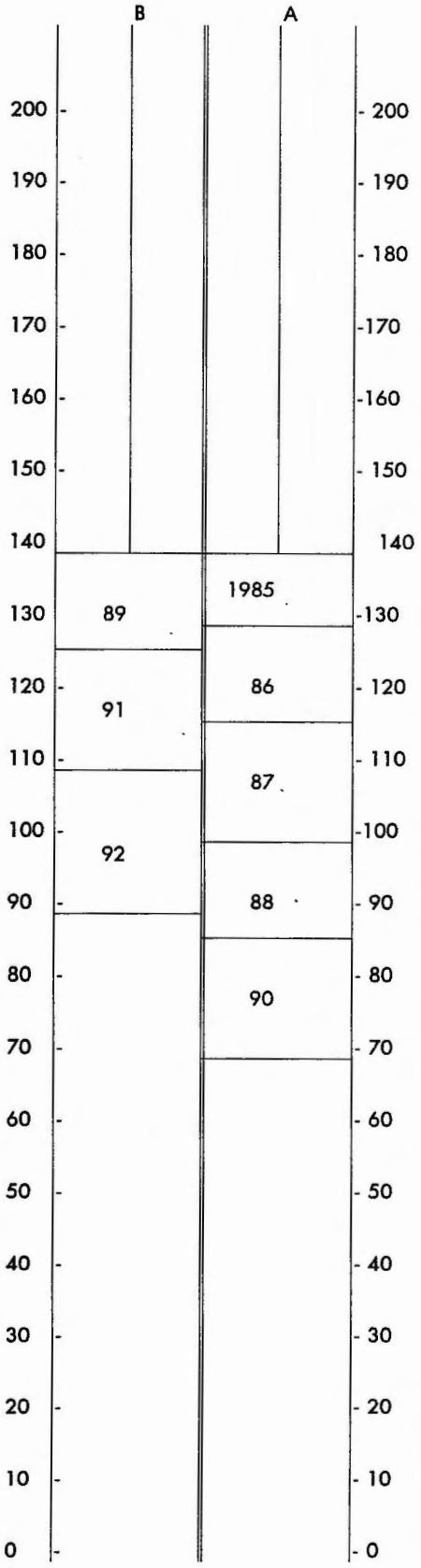
Observations :
. from July 91 to December 91 apply
10 stimulations at 5 %
. 1992 - change panel as shown on the diagram
and apply 20 stim. at 5 %
. be careful with the wounds.



Year of Tapping	Tapping System	Production KG/HA
1981		1280
1982		1821
1983		1514
1984		1426
1985		1421
1986		1285
1987		1562
1988		1876
1989		1691
1990	1/4 S d/4 ↗ 13 stim. 5 %	1788
1991	1/4 S d/4 ↗ 15 stim. 5 %	
1992	1/4 S d/4 ↗ 20 stim. 5 %	

Date of visit : 21/6/91
Name of the plantations : TANJUNG - MARIA
Block : 17 (associated blocks 18 and 13 -AVROS)
area : 60 ha
clone : GT 1
date of planting : 1980
date of opening : 1985

Observations :
. from July to December 1991, increase stimulation
block 13 and part of 18
clone AVROS 2037 apply 10 stimulations 5 %
for GT 1 apply 8 stim. 5 %
. 1992 - clone AVROS - 14 stim. 5 %
clone GT 1 - 10 stim. 5 %
. the new tapping experiment will be set up in a part of this blocks.
. no panel change 1992.

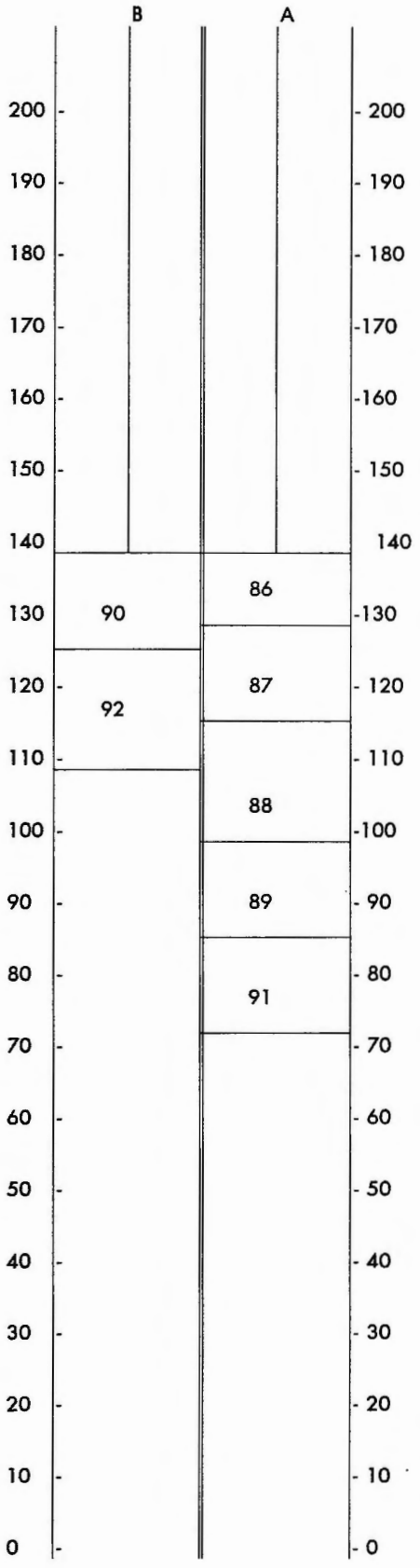


Year of Tapping	Tapping System	Production KG/HA
1985		589
1986		567
1987		895
1988		1157
1989		1443
1990	S/2 d/4 13 stimulations 2.5 %	1415
1991	S/2 d/4 -	
1992	"	

Date of visit : 21/6/91
Name of the plantations : TANJUNG - MARIA
Block : 7
area : 22 ha
clone : GT 1
date of planting : 1981
date of opening : 1986

Observations :

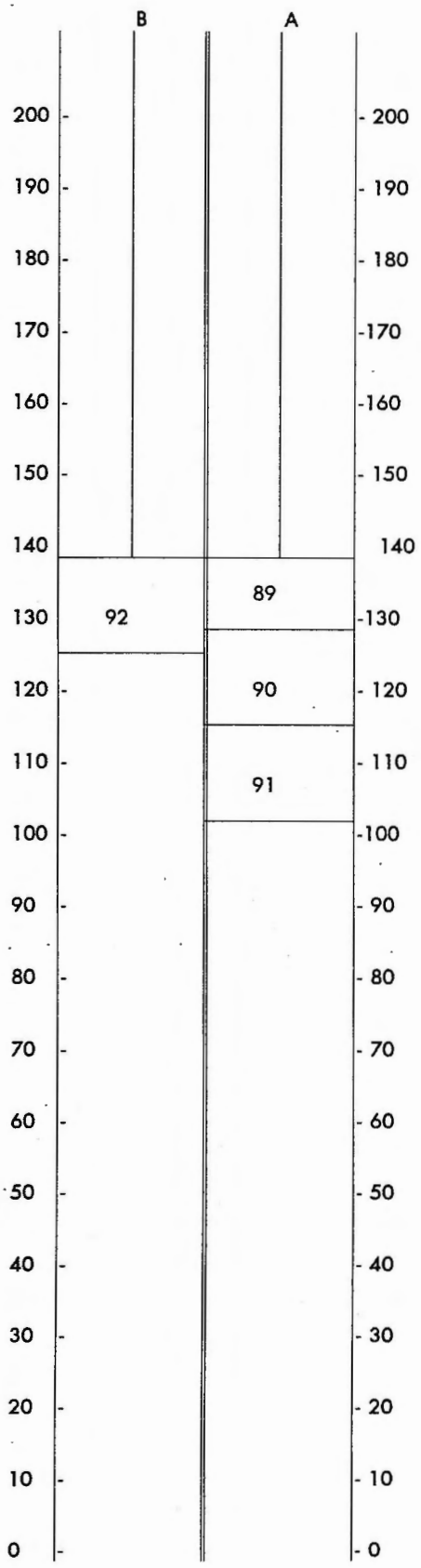
. follow the diagram : 1992 - 10 stim. 5 %



Year of Tapping	Tapping System	Production KG/HA
1986		494
1987		967
1988		1137
1989		1053
1990	1/2 S d/4 + 12 stim. 2.5 %	1514
1991	- + 12 stim. 2.5 %	
1992	- + 10 stim. 5 %	

Date of visit : 21/6/91
Name of the plantations : TANJUNG - MARIA
Block : 5
area : PR 255 (7.2 ha) - PR 261 (9 ha) - GT 1 (29.9 ha) - PB 235 (24 ha) - PB 260 (23.5 ha)
clone :
date of planting : 1984
date of opening : 1989

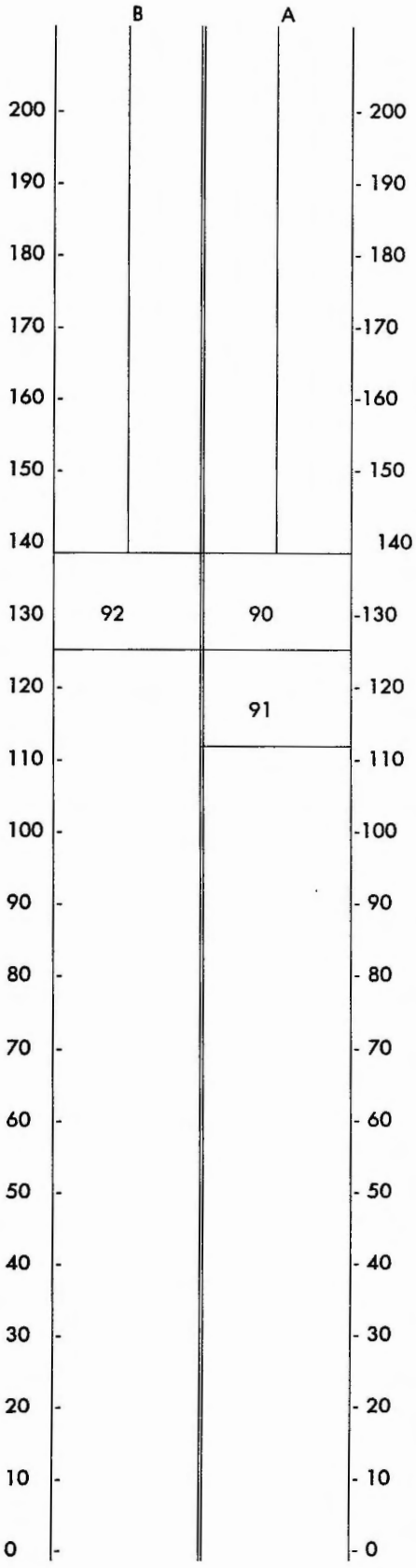
Observations :
. make observation on the evolution of the canopy on PB 235
. follow the diagram in 1992
clones PB 235 - 260 = only 4 stim. 2.5 %
clone GT 1 = 10 stim. at 2.5 %
clones PR 255 - 261 = 8 stim. at 5 %



Year of Tapping	Tapping System	Production KG/HA
1989	S/2 d/4	324
1990	" 4 stim. 2.5 %	988
1991	"	

Date of visit : 21/6/91
Name of the plantations : TANJUNG MARIA
Block : 4 (associated bloc 7)
area :
clone : PB 235 (36,06 ha) - PB 260 (9 ha)
date of planting : 1985
date of opening : 1990

Observations :
. make observation on the evolution of the canopy on PB 235
. follow diagram only 4stim. at 2.5 %

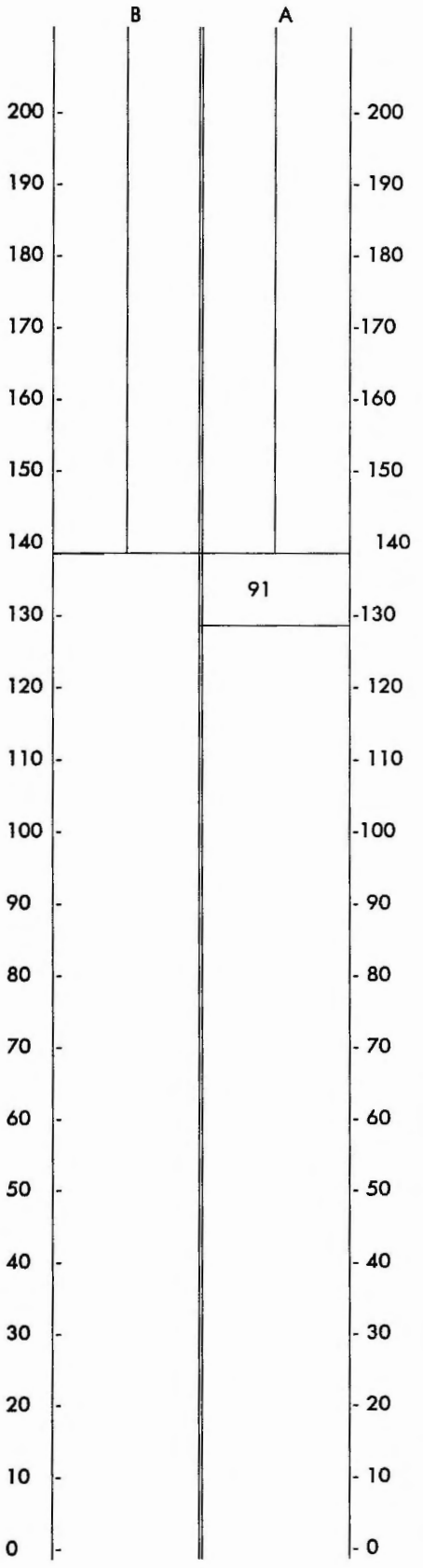


Year of Tapping	Tapping System	Production KG/HA
1990	S/2 d/4 + 4stim. 2.5 %	758
1991	"	
1992	"	

Date of visit : 21/6/91
Name of the plantations : TANJUNG MARIA
Block : 3
area : PB 260 (7.5 ha) - PB 235 (67.59 ha)
clone :
date of planting : 1986
date of opening : 1991

Observations :

. only 3 stimulations at 2.5 % in 1992



Year of Tapping	Tapping System	Production KG/HA
1991	S/2 d/4 + 2 stim. 2.5 %	
1992	" + 3 stim. 2.5 %	

3. Visit to the Aek-Loba oil palm plantation

3.1. At the request of SOCFINDO management, we took a quick tour round the eastern part of the plantation: Aek Loba Timur and Aek Loba Korsik, which cover 1,135 and 1,322 ha respectively, i.e. a total of 2,457 ha currently planted with oil palm.

SOCFINDO management wanted our opinion on the soil conditions for possible *hevea* planting.

This visit took place in the company of Mr. Ochs (IRHO) and Mr. Tampubolon.

Following this visit, our comments are:

- Relief: flat, slightly sloping from North to South,
- Drainage: the plantation as a whole has a very efficient drain network,
- The soils are quite homogeneous loamy sand on the whole,
- The good performance of a plot of heveas around 15 years old can be seen in the Northeast corner near block 8.

3.2. Three trenches, 1.5 m deep, were examined:

- block 34, examination of the profile shows:

a 5-10 cm, brown surface horizon,
an 80 cm grey/ochre loamy sand layer,
a 25 cm ochre/yellow layer with red patches (iron-manganese),
a > 40 cm stripy grey layer.

This is a deep soil with waterlogging marks, probably from the rainy season, from around 1 metre down.

- blocks 6 and 3 (the profiles are very similar):

a 10-15 cm blackish-brown surface horizon
a 40-50 cm yellowish-orange loamy sand layer,
a > 50-60 cm greyish-yellow sand layer with quartz grains.

Deep, well-drained soils.

To conclude, the main problem could stem from drainage, though the drain network seems to be very efficient. These deep, sandy soils are perfectly suited to hevea.

Reference can be made to the soils at the IRCA Station in the Ivory Coast which is set up on tertiary sands. Tree performance and production are of a very high level, despite substantial chemical impoverishment.

4. Tapping trial

4.1. Trial set up at Lima Pulah (LP-AE-01)

This trial was set up in January 1988. Conclusions have been drawn up each year (see previous mission reports).

The trial conditions are as follows:

- clone GT 1, trees planted in 1979, tapping begun at 5 years in 1/2 S d/3. The trial began in January 1988, at the beginning of the 5th tapping year, i.e. at the beginning of the 9th year after planting.

- Aims:

  - compare under trial conditions the control system consisting of 1/2 S d/4 + 10 stimulations/year (2.5% a.i., i.e. 200 mg a.i./year) to the same systems with higher stimulation intensity (320, 400, 480 mg a.i./year).

  - compare the conventional 1/2 S downward tapping system with 1/4 S upward tapping, alternated annually with 1/2 S downward.

After 3 years of trials, the results in the annex reveal:

1) a good production level for the control: 1,558 kg/ha, 1,890 kg/ha and 2,499 kg/ha respectively in 1988-89 and 90.

2) under trial conditions, especially on GT 1 at this age, increased stimulation does not lead to over-production; the production results do not differ significantly between treatments 1, 2, 3 and 4.

3) The following table shows the production levels for the 3 trial years:

Production over the 3 years for the I/2 S ↘ control and the treatments with alternate 1/2 S ↘ and I/4 S ↗

YEAR	CUT	TREAT. 5		TREAT. 6		CONTROL
		a.i/y	Kg/ha	a.i/y	Kg/ha	1/2 S \stim. 400 mg a.i/y
1988	1/4 S↑	240	1217	400	1556	1558
1989	1/2 S↓	400	2539	400	2233	1890
1990	1/4 S↑	240	1556	400	1881	2499
Total %		5312 89		5670 95		5947 100

5.6 > 3

91 | 1/2 S↓ | 400 | 1169 | 400 | 1053 | 1278 | 5.6 > 3

Total | 6.481 | 6.723 | 7.295

90 | 93 | 100

a. alternating 1/2 S↘ and 1/4 S↗ leads to over-production for 1/2 S ↘ .

b. it is probable that stimulation in 1/4 S of treatment 5 (240 mg of a.i./year) is too low. In fact, returning to normally stimulated 1/2 S ↘ reveals clear over-production compared to the control.

c. stimulation of 1/4 S↗ at 400 mg of a.i./year gives good production results.

When the 1/4 S ↗ d/4 system is applied, a very low intensity system, quite strong stimulation is required. 400 mg of a.i./year seems to be the minimum level.

d. Given the high production potential of upper bark with reversed tapping, it seems that upward tapping should not be introduced on GT 1 until downward tapping has been practised for 8-10 years.

It would have been interesting to continue this trial on a long-term basis to check the impact of 1/4 S↗ and 1/2 S↘ on tree performance, especially on their physiological condition, using latex diagnosis. Unfortunately, the October 1990 tornado caused numerous tree losses.

The figures indicating the number of trees remaining per elementary plot are given in the annex. Whereas there were around 100 trees being tapped in all the plots at the beginning of the trial, the last inventory shows variations ranging from 23 trees in plot B5 to 106 trees in plot C6. The statistical design is highly unbalanced, hence the trial is jeopardized and is due to be halted at the end of 1991.

We propose setting up a new trial. The protocol is given in the annex.

5. Note on clone recommendations for the short and medium terms in SOCFINDO's planting-replanting programme

5.1. Strategy

- Large-scale planting of an already well-known set of clones (short-term aim).

- Enhance the composition of this set of clones intended for commercial estates by setting up single-clone blocks (commercial type, with promising clones) (medium-term aim).

- Enlarge the list of promising clones by the regular introduction of experimental clones, which will be tested in small, single-clone plantings (long-term aim).

- Ensure that the clone choice policy is flexible and forward-looking.

It is necessary to:

- maintain a good balance in the clonal composition of plantations,

- maintain a good balance between the three groups of clones:

  - commercial clones (category I)
  - pre-commercial clones (category II)
  - experimental clones (category III)

- ensure good management of the budwood gardens supplying the three types of plantations,

- simplify planting designs, so as to move towards the conditions of commercial estates.

5.2. Principles

- Divide up the clones into recommendation categories:

  * category I, large-scale 5 clones
  * category II, medium-scale 10 clones
  * category III, experimental scale 20 clones

  For example, clones which are undoubtedly of great value, but which may have certain unfavourable characteristics under SOCFINDO agricultural conditions in Indonesia, should be categorized accordingly. Such is the case with PB 217 with its susceptibility to *Gloesporium*, or PR 107 with its uncertain economic profitability given its slow growth and late start to production.

- Establish area quotas for each of the clone categories:

  * category I 80% of the area planted (commercial)
  * category II 15% of the area planted (pre-commercial)
  * category III 5% of the area planted (experimental)

- Draw up planting programmes in 5-6 year stages. Given the lack of reliable results for clones in North Sumatra, the following recommendations were arrived at for SOCFINDO, by data cross-checking:

  a) for replanting only (table 5.4)
  b) for replanting and new extensions (table 5.5).

5.3. Clone classification for North Sumatra, according to available information

Category I (80% of the area planted)

PB 235 - PB 260 - GT 1 (if there is not too high a risk of *Gloesporium*, otherwise replace it with PR 261.

RRIC 100 and PB 217 (if *Gloesporium* risks are high, replace with PB 254).

Category II (15% of the area planted)

IRCA - 18 - 111 - 109
PB - 255 - 330 - 280
PR - 300 - 255
BPM 24
RRIM 712 (watch out for leaf diseases)

Category III (5% of the area planted)

PB - 310 - 311 - 314 - 324 - 340
RRIM - 805 - 901 - 905 - 703 - 926 - PM 10
IRCA - 130 - 230
BPM - 1
PR - 303 - 309
RRIC - 101 - 110 - 121

5.4. Recommandations for replanting programme only in SOCFINDO (according to the table of agricultural department 15/2/91)

PLANTATION	YEARS	HA	CLONES TO BE PLANTED CLASE I	CLONES TO BE PLANTED CLASSE II	CLONES FOR CLONAL FIELD
Tanjung Maria	92	56	PB 235 (56)		
	93	72	PB 260 (52)	IRCA 18 (10), IRCA III (10)	
	94	-			
	95	-			
Tanah Besih	92	-			
	93	-			
	94	40	RRIC 100 (40)		
	95	41	PB 217 (41)		
Lima-Puluh	92	84	PR 261 (54)	IRCA 109 (15), PB 255 (15)	-
	93	87	RRIC 100 (50)	RRIM 712 (15), BPM 24(15)	7 ha (PB 310 - 311
	94	116	PB 235 (50) PB 260 (50)	PB 330 (16)	314 - 324 - 340 - GT 1
	95	-			PB 235)
Aek-Pamienke	92	115	PB 235 (50), PB 260 (50)	PB 280 (15)	
	93	118	PR261 (45), RRIC 100 (48)	PR 300 (18)	7 ha (5 clones RRIM)
	94	114	PB 254 (50), PB 260 (57)	-	7 ha (IRCA 130 - 230 -
	95	-		-	PR 303 - 309 - BPM 1)
Total		843	693 ha (82 %)	129 (15 %)	21 (2,5 %)

in brackets the area per clone in ha.

5.5. Recommandations for the total area of new planting/replanting programmes in SOCFINDO 1992-1995 (according to the table of agricultural department 15/2/91)

ANNEES	AREA (HA)	AREA PER CLONE		
		(1) classe I	(2) classe II	(3) classe III
92	505	355	125	25
93	1514	1314	125	75
94	1787	1437	250	100
95	1376	1026	250	100
Total	5182			

(1) distribution of the 5 clones in category II according to plantation, available areas and budwood garden availability.

(2) for testing 10 promising clones (category II) at a rate of 3 x 25 ha/clone (5 clones in 92; 5 clones in 93; 10 clones in 94 and 95).

(3) for testing 20 new clones (category III) at a rate of 3 x 5 ha/clone (5 clones in 92; 15 clones in 93; 20 clones in 94 and 95).

5.6. Comments on the continuation of clone recommendations

The recommendations made above are based on data gathered by IRCA in Africa and Asia, but not on the results of observations made in North Sumatra.

In order to increase the number of clones and issue reliable recommendations, it would be advisable to monitor clones under the conditions prevailing in North Sumatra, both on estates and in experimental clone plots. IRCA is prepared to respond to any request to undertake a study of clone performance in North Sumatra. A visit by the head of the genetics and clone study programme is scheduled for 1992. Following this visit, proposals will be made which should enable progress to be made in clone recommendations.

6. Latex Diagnosis (LD) Laboratory

As soon as the laboratory is operational, it will be necessary to set up a network of plots representative of the plantations for taking the latex samples to be analyzed.

The blocks currently used could serve as a basis for the network.

Mr. Serres should be aware of this report.

It is certain that if the LD results are added to the examination of the parameters currently used, recommendations will be based on even more accurate knowledge of the trees' physiological condition.

As far as possible, the methodology used for tree identification in the Ivory Coast should be applied, or improved upon.

Likewise, the sampling period should be checked.

ANNEX 1

TAPPING SYSTEM EXPERIMENT
LP-AE-01

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3 years results

. Production per ha/year

. Production per tree/tapping

. Production per tree/year

. Evolution of the number of tree in tapping/year

. Girth increment from 1988 to 1991

Trial No. LP - AE - 01 - Treatments

No. of treatment	Tapping system	Stimulation		
		Number a.i. %	Mixture per stimulation per tree	Quantity of a.i./tree/year
1 (red)	S/2 d/4	12 5 %	0.8 cc	480 mg
2 (blue)	S/2 d/4	8 5 %	0.8 cc	320 mg
3 (black) Control.	S/2 d/4	10 2.5 %	0.8 cc	200 mg
4 (yellow)	S/2 d/4	10 5 %	0.8 cc	400 mg
5 (green)	S/4 ↗ d/4 1988-90-92-94	12 5 %	0.4 cc	240 mg
	S/2 d/4 ↘ 1989-91-93-95	10 5 %	0.8 cc	400 mg
6 (white)	S/4 ↗ d/4 1988-90-92-94	20 5 %	0.4 cc	400 mg
	S/2 d/4 ↘ 1989-91-93-95	10 5 %	0.8 cc	400 mg

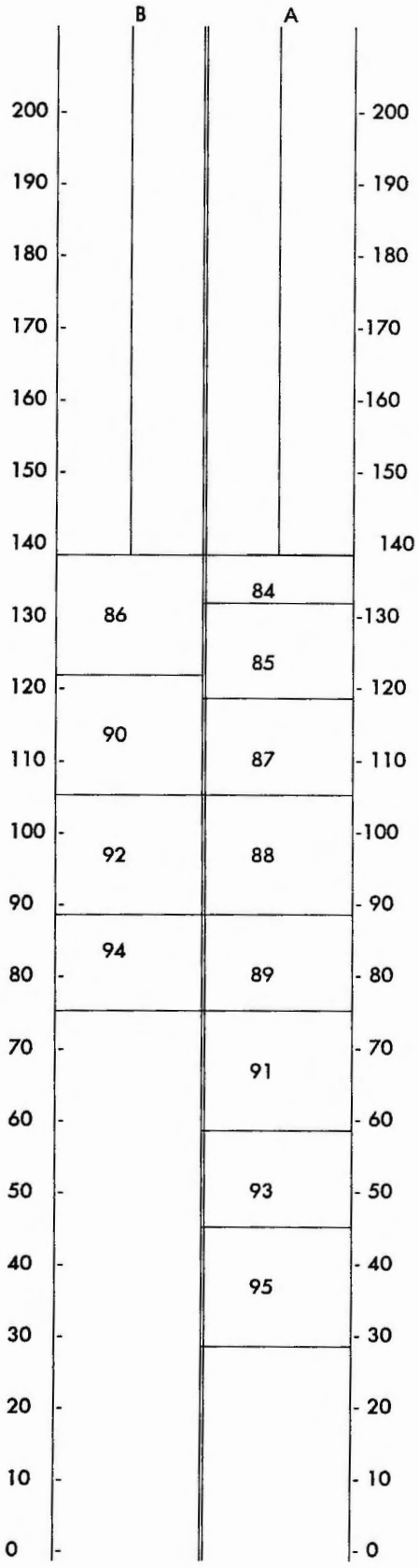
Repartition of stimulations for one year

Nber of stimulations \ Months	J	F	M	A	M	J	J	A	S	O	N	D
8	x					x	x	x	x	x	x	x
10	x	x	x			x	x	x	x	x	x	x
12	x	x	x			x	x	x	x	x	xx	xx
20	xx	xx	xx			xx	xx	xx	xx	xx	xx	xx

Date of visit :
Name of the plantations : LIMA - PULUH
Block : 10 - Experiment n° LP-AE-01
area : 6 ha
clone : GT 1
date of planting : 1979
date of opening : 1984

Observations :

diagram treatments 1 - 2 - 3 - 4

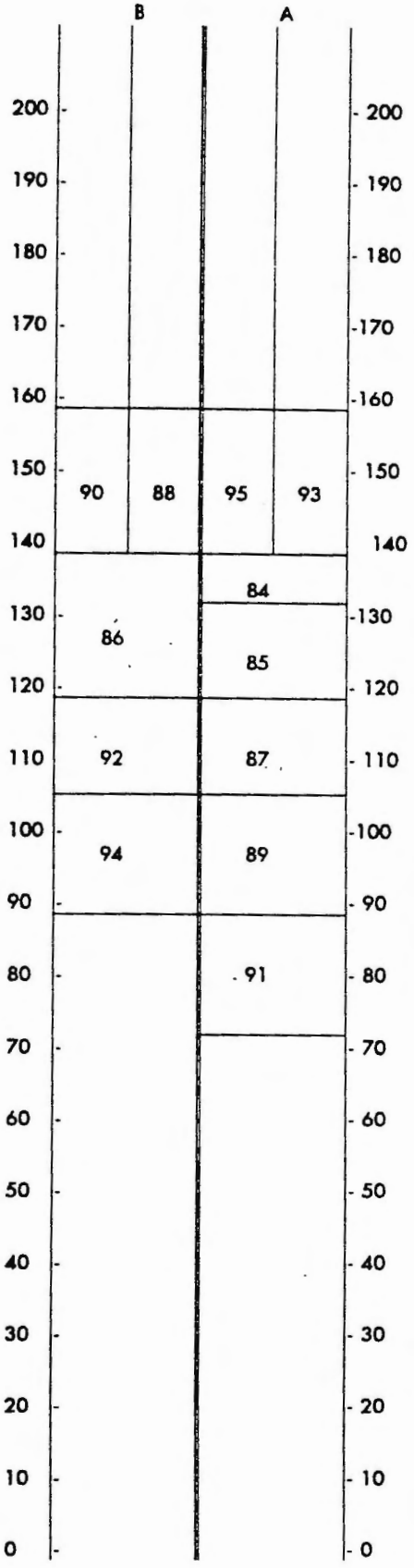


Year of Tapping	Tapping System	Production KG/HA	Control
1984	1/2 S d/3	236	
1985	"	904	
1986	"	1446	
1987	"	1484	
1988	1/2 S d/4 + stimulation	1730	1600
1989	"	1692	1800
1990	"	1942	2500
1991			

Date of visit :
Name of the plantations : LIMA - PULUH
Block : 10 - Experiment n° LP-AE-01
area : 6 ha
clone : GT 1
date of planting : 1979 -
date of opening : 1984

Observations :

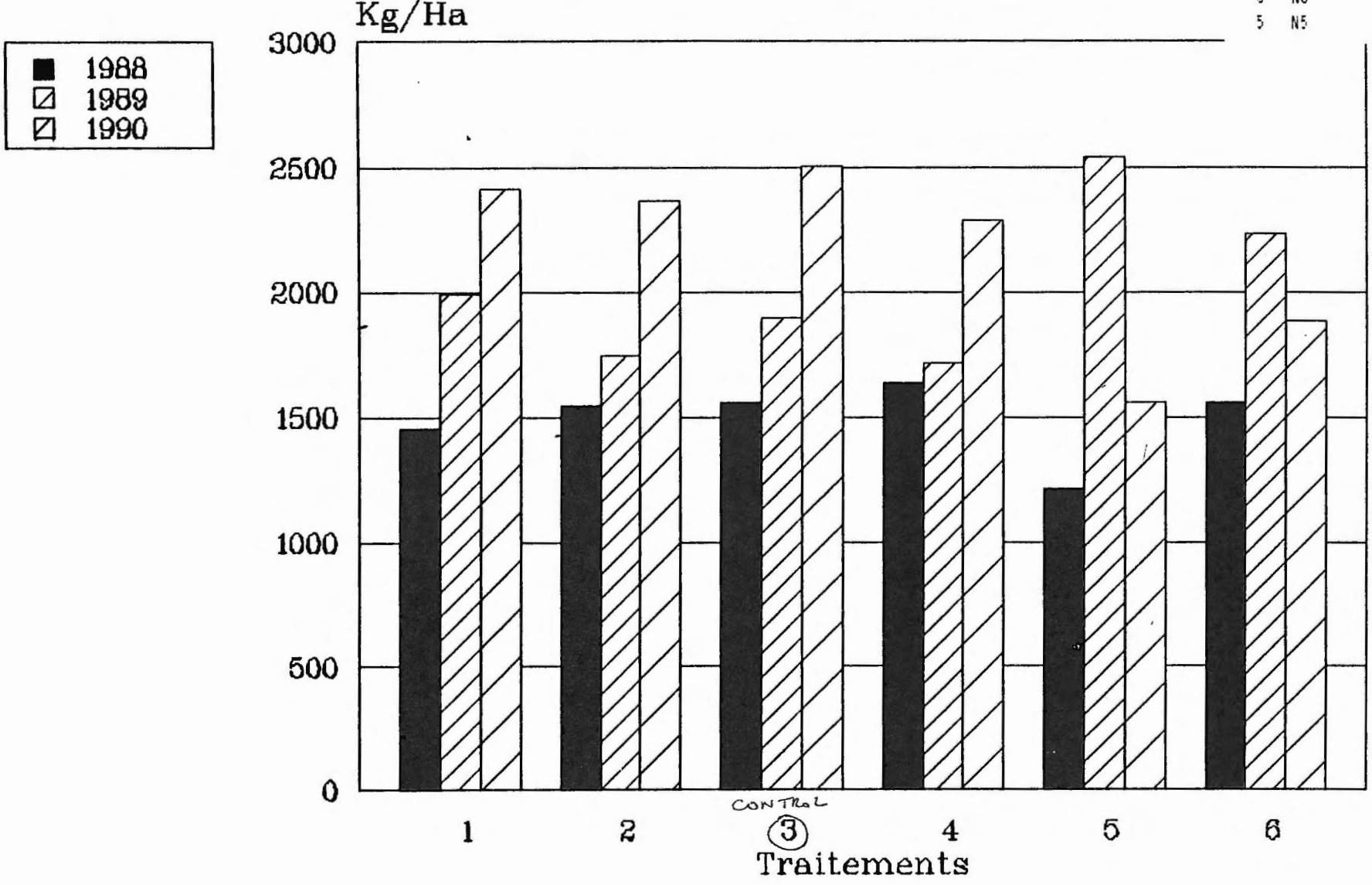
Diagram treatments 5 - 6



Year of Tapping	Tapping System	Production KG/HA
1984	1/2 s d/3	
1985	"	
"	"	
1987	"	
1988	1/4 S d/4 + stimulation	
1989	1/2 S d/4 + stimulation	
1990	1/4 S d/4 + stimulation	
1991	1/2 S d/4 + stimulation	

LP AE 01
Kg/Ha annuel

F1	LIBELLES	MOYENNES	GROUPES	HOMOGENES
3	N3	2499.00	A	
1	N1	2416.25	A	
2	N2	2368.50	A	
4	N4	2290.75	A	
6	N6	1881.25	A	B
5	N5	1556.75		B

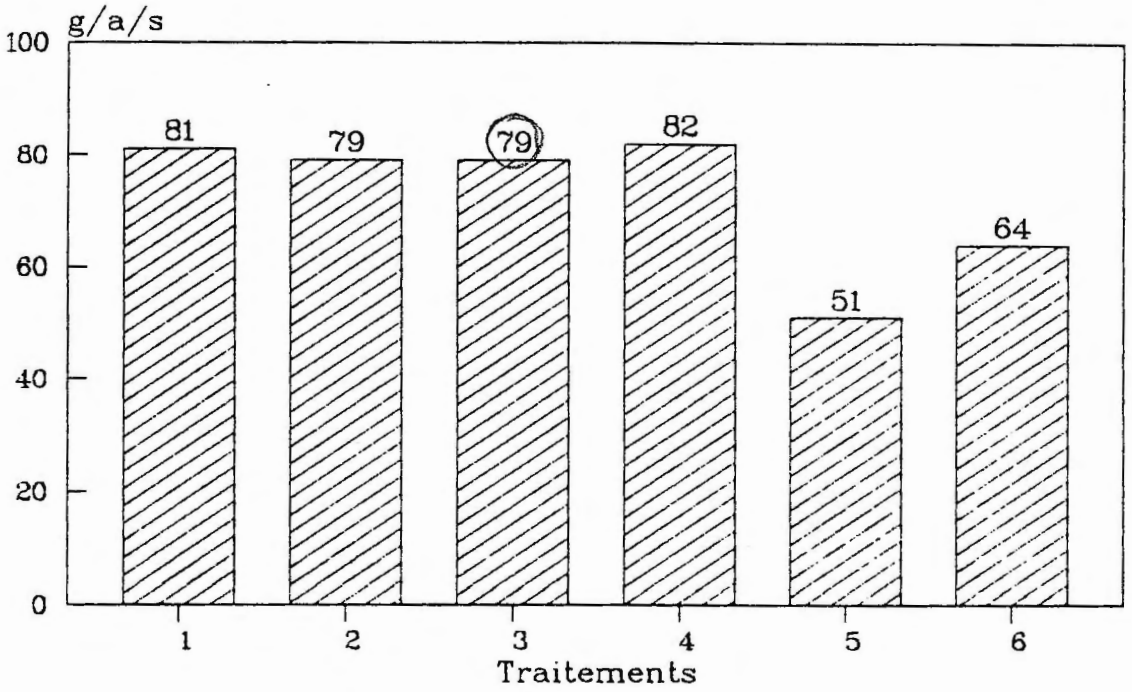


LP AE 01 Année 1990

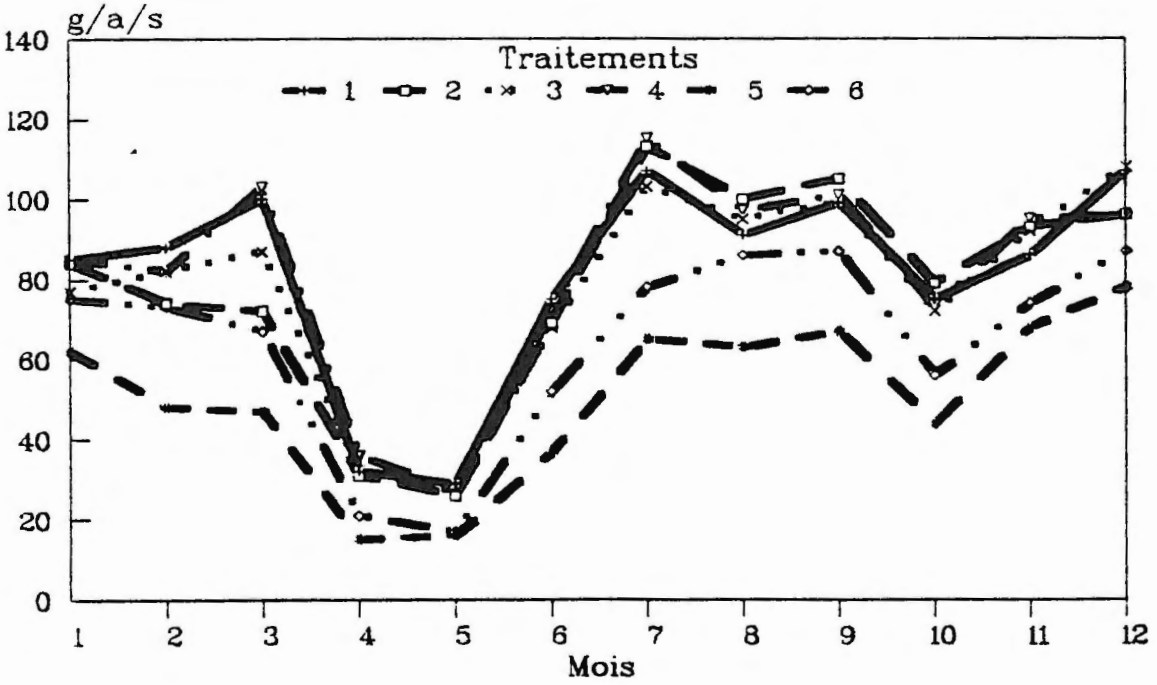
kg/ha	Jan	Fev	Mar	Avr	Mai	Jun	Jul	Aou	Sept	Oct	Nov	Dec	Total Jan/Dec	%	Total Jan/Jun	%	Total Jul/Dec	%
1	242	214	284	78	81	212	261	258	240	210	159	177	2416	100	1111	100	1305	100
2	234	175	199	75	72	188	270	279	250	219	204	203	2368	98	943	85	1425	109
3	228	209	260	81	81	203	262	282	252	215	205	222	2499	103	1062	96	1437	110
4	221	186	273	82	71	186	258	256	226	190	169	171	2291	95	1020	92	1271	97
5	186	122	141	39	47	109	164	187	171	132	127	132	1557	64	643	58	914	70
6	216	174	188	50	47	144	184	237	205	155	143	138	1881	78	818	74	1063	81
Moyenne	221	180	224	68	66	174	233	250	224	187	168	174	2169		933		1236	

4	4	81.77	A	
1	1	81.18	A	
3	3	78.55	A	
2	2	78.22	A	
6	6	64.43		B
5	5	50.93		C

LP AE 01
g/a/s
1990



LP AE 01
g/a/s
1990



LP AE 01 Année 1990

g/a/s	Jan	Fev	Mar	Avr	Mai	Jun	Jul	Aou	Sept	Oct	Nov	Dec	Moyenne Jan/Dec	%	Moyenne Jan/Jun	%	Moyenne Jul/Dec	%
1	85.2	88.0	100.1	31.9	28.8	75.0	107.3	91.3	99.1	74.8	86.1	106.6	81.2	100	68.2	100	94.2	100
2	83.8	73.8	71.9	31.4	25.7	68.5	113.1	100.2	104.5	78.6	93.2	95.7	78.3	97	59.2	87	97.5	104
3	77.2	82.3	87.3	31.9	27.1	68.3	102.9	94.8	98.5	71.9	92.3	108.4	78.6	97	62.4	91	94.8	101
4	84.6	82.3	103.2	36.0	27.2	71.8	115.2	97.2	100.8	72.5	94.5	95.6	81.7	101	67.5	99	96.0	102
5	62.0	48.0	47.2	15.2	15.8	36.5	64.5	63.0	67.2	44.4	67.7	78.4	50.8	63	37.4	55	64.2	68
6	75.4	73.3	67.4	20.9	16.8	52.1	77.8	85.8	87.4	55.7	73.5	87.4	64.5	79	51.0	75	77.9	83
Moyenne	78.0	74.6	79.5	27.9	23.6	62.0	96.8	88.7	92.9	66.3	84.5	95.3						

LP AE 01 Année 1990

g/a	Jan	Fev	Mar	Avr	Mai	Jun	Jul	Aou	Sept	Oct	Nov	Dec	Total Jan/Dec	%	Total Jan/Jun	%	Total Jul/Dec	%
1	597	528	701	191	201	525	644	639	595	523	602	746	6492	100	2743	100	3750	100
2	586	442	503	188	180	479	679	701	627	550	652	670	6258	96	2380	87	3878	103
3	540	494	611	191	190	478	617	663	591	503	646	759	6285	97	2505	91	3780	101
4	592	494	722	216	191	502	691	681	605	508	662	669	6532	101	2717	99	3816	102
5	434	288	330	91	110	255	387	441	403	311	474	549	4073	63	1509	55	2565	68
6	527	439	472	125	118	365	467	601	525	390	514	612	5155	79	2047	75	3108	83
Moyenne	546	448	557	125	165	434	581	621	558	464	592	667	5799		2317		3483	

CUMUL KG SEC / HECTARE	LPAE01	1/ 1/ 90	1/12/ 90

Trait	Rep. 1	2	3	4	moy.
1	2245.7	2620.1	2522.1	2277.4	2416.3
2	2053.9	2559.9	2317.0	2542.8	2368.4
3	2234.7	2658.4	2577.8	2525.1	2499.0
4	1910.5	3247.3	2242.2	1763.4	2290.9
5	1498.5	1327.7	1694.3	1705.7	1556.6
6	1782.7	1599.1	2260.7	1882.0	1881.1
moy.	1954.3	2335.4	2269.0	2116.1	2168.7

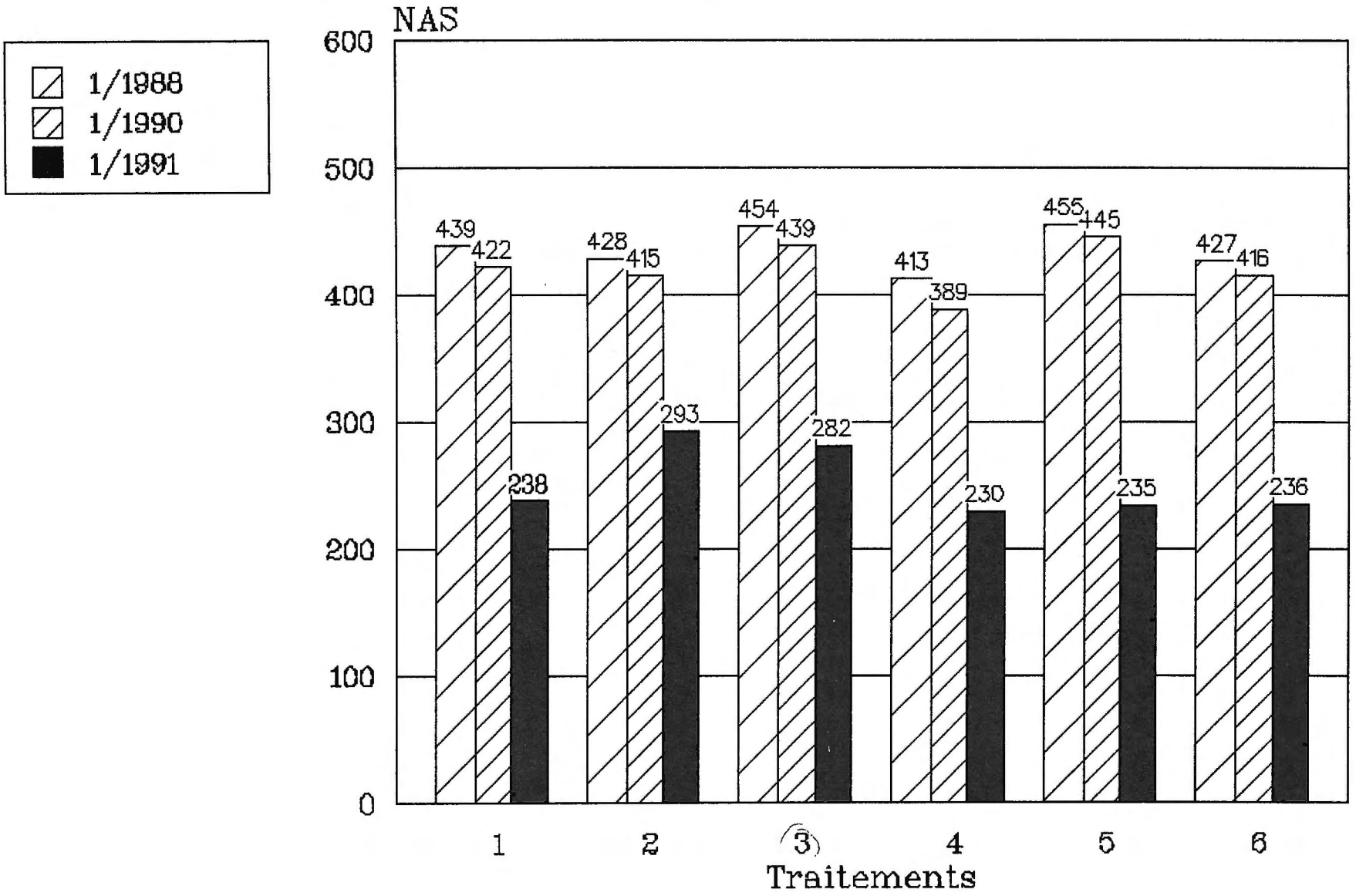
CUMUL GRAMME /ARBRE	LPAE01	1/ 1/ 90	1/12/ 90

Trait	Rep. 1	2	3	4	moy.
1	6326.8	7052.0	6409.0	6180.8	6492.1
2	5506.2	6656.3	6750.9	6119.0	6258.1
3	6016.0	6936.3	6104.6	6083.2	6285.0
4	5406.4	7380.9	6790.4	6552.7	6532.6
5	4038.8	3861.4	4042.9	4350.2	4073.3
6	5233.7	5070.6	5280.9	5033.9	5154.8
moy.	5421.3	6159.6	5896.4	5720.0	5799.3

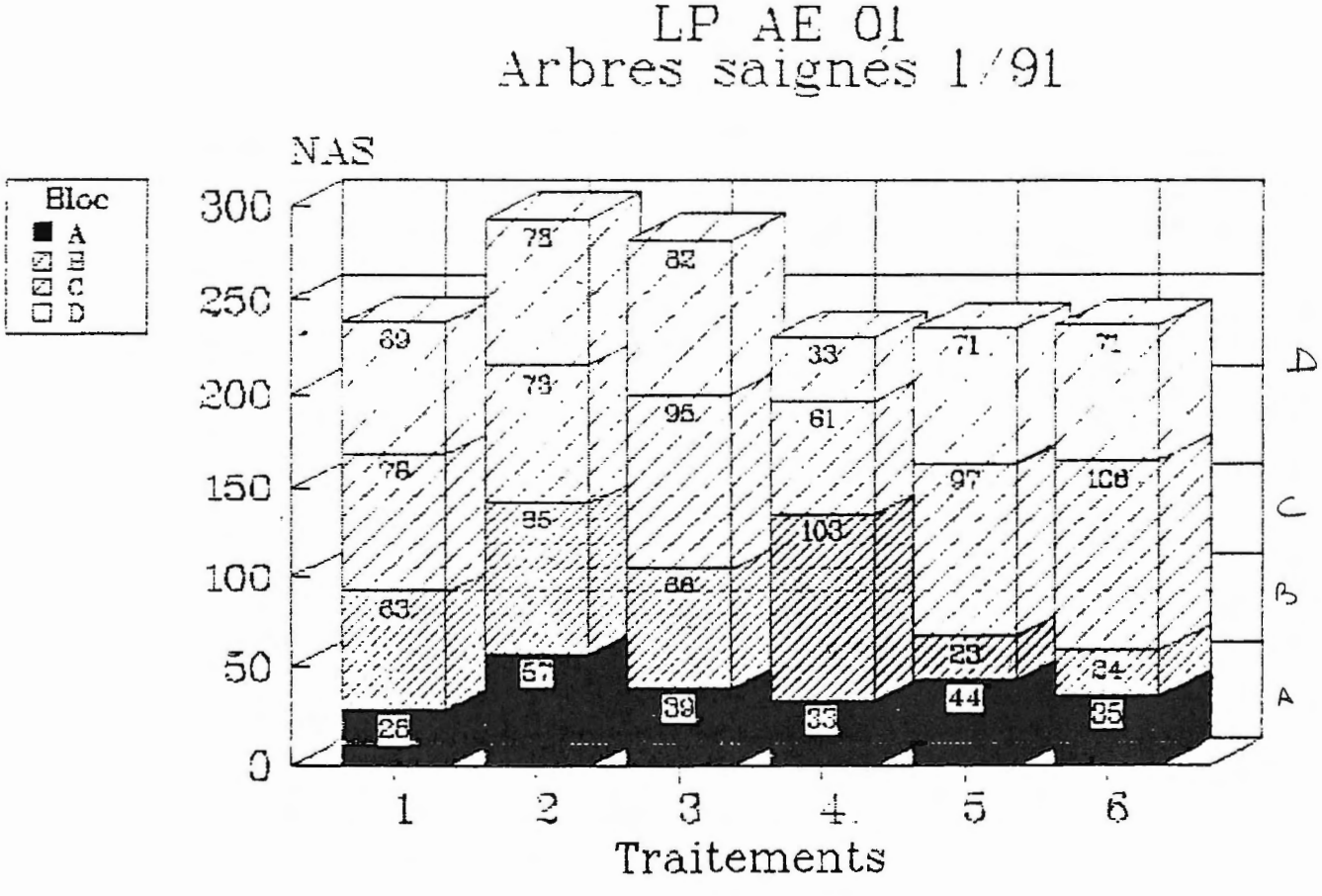
CUMUL GRAMME/ARBRE/SAIGNEE	LPAE01	1/ 1/ 90	1/12/ 90

Trait	Rep. 1	2	3	4	moy.
1	79.08	88.15	80.11	77.26	81.15
2	68.83	83.20	84.39	76.49	78.23
3	75.20	86.70	76.31	76.04	78.56
4	67.58	92.26	84.88	81.91	81.66
5	50.49	48.27	50.54	54.38	50.92
6	65.42	63.38	66.01	62.92	64.43
moy.	67.77	76.99	73.71	71.50	72.49

LP AE 01
Arbres saignés

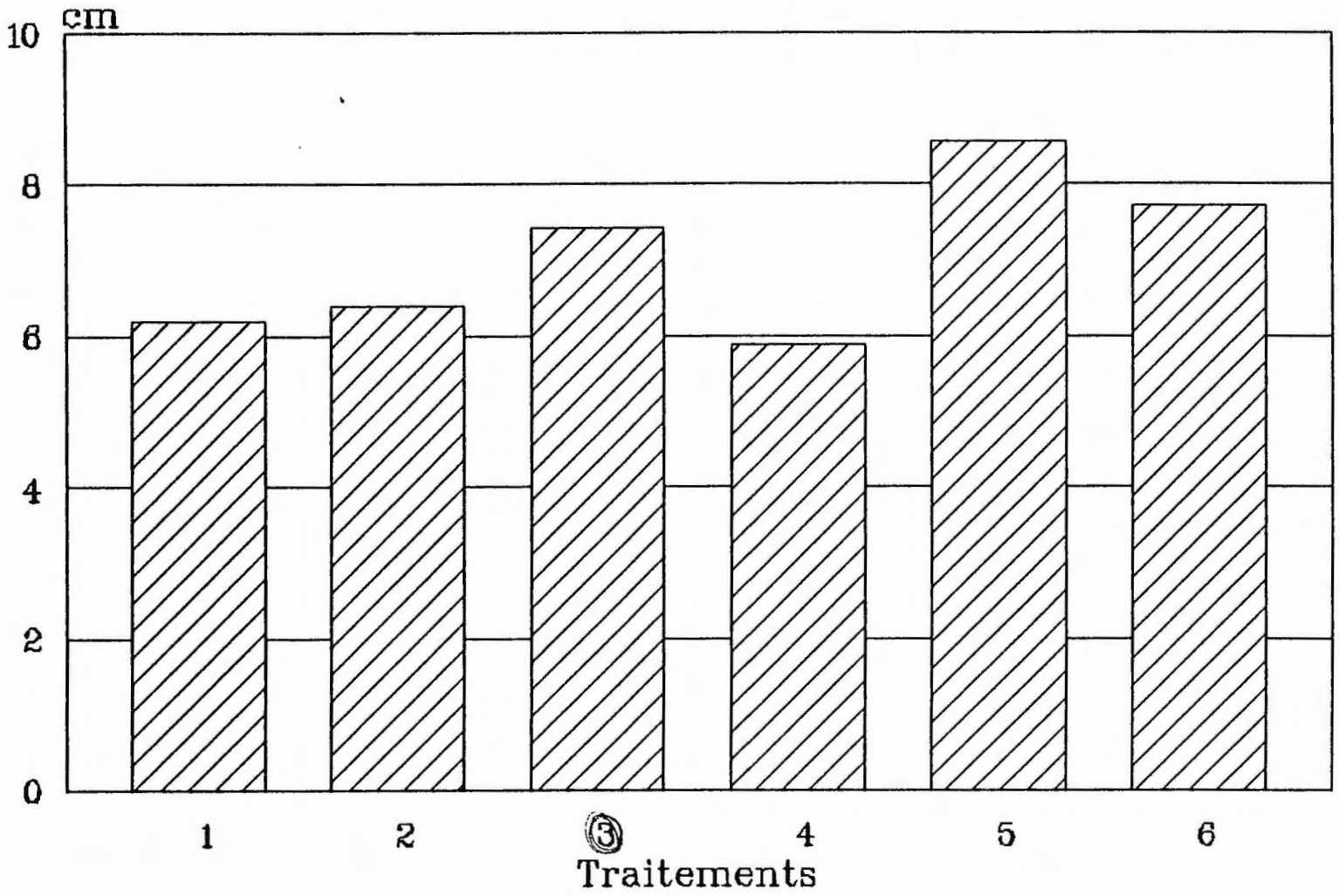


Arbres saignés 1/9		A	B	C	D	Moy
1) 1/2S 5% 12/Y	1	28	63	78	69	60
2) 1/2S 5% 8/Y	2	57	85	73	78	73
3) 1/2S 2,5% 10/Y	3	39	66	95	82	71
4) 1/2S 5% 10/Y	4	33	103	61	33	58
5) 1/4S / 5% 12/Y	5	44	23	97	71	59
6) 1/4S / 5% 20/Y	6	35	24	106	71	59
		39	61	85	67	63



F1	LIBELLES	MOYENNES	GROUPES HOMOGENES
5	5	8.55	A
6	6	7.72	A B
3	3	7.42	A B
2	2	6.38	B
1	1	6.17	B
4	4	5.82	B

Accroissement 88/91



ANNEX 2

ANNEX II

Tapping trial on GT 1
SOCFINDO's TANJUNG MARIA PLANTATION

Trial TM-EA-01

Purpose

With the industrial-scale application of the 1/2 S d/4 + stimulation system, the tapping intensity practised by SOCFINDO is low.

However, tapping work is destined to undergo further reduction in the future. In addition, as the results in trial LP-AE-01 revealed the merits of alternating 1/2 S ↘ with 1/4 S ↗, it becomes worthwhile to study tapping systems of further reduced intensity.

The results obtained by IRCA, particularly in Africa, also suggest that the d/5 frequency will be of interest in the future.

The purpose of this trial is therefore to determine the merits of the d/5 frequency in 1/2 S ↘ alone or combined with 1/4 S ↗, with stronger stimulation.

With the use of stronger stimulation, latex diagnosis will be a useful tool in monitoring the physiological condition of the trees.

Location

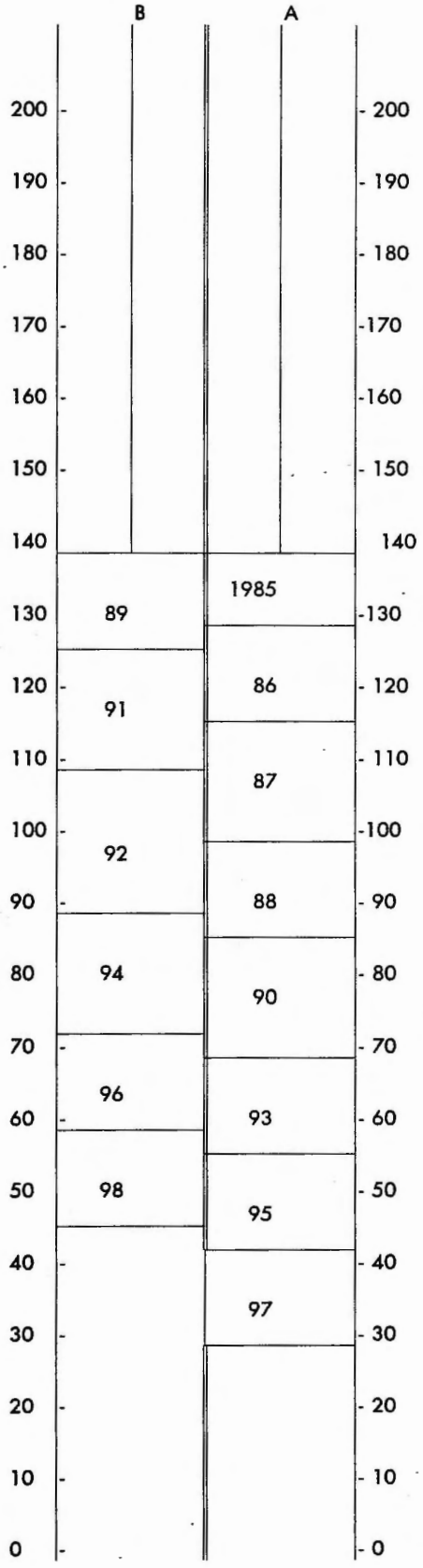
- Plantation : Tanjung Maria
- Block : 17
- Clone : GT 1 planted in 1980
- 1 elementary plot : 4 rows x 30 points = 120 points
- Number of points for the trial:
  120 points x 24 elementary plots = 2,880.

Date of visit : 21/6/91
Name of the plantations : TANJUNG - MARIA
Block : 17 (associated blocks 18 and 13 -AVROS)
area : 60 ha
clone : GT 1
date of planting : 1980
date of opening : 1985

Observations :

Treatment : 1-3-4-5

. position of the cut on the panel from year 92,
as shown on the diagram.



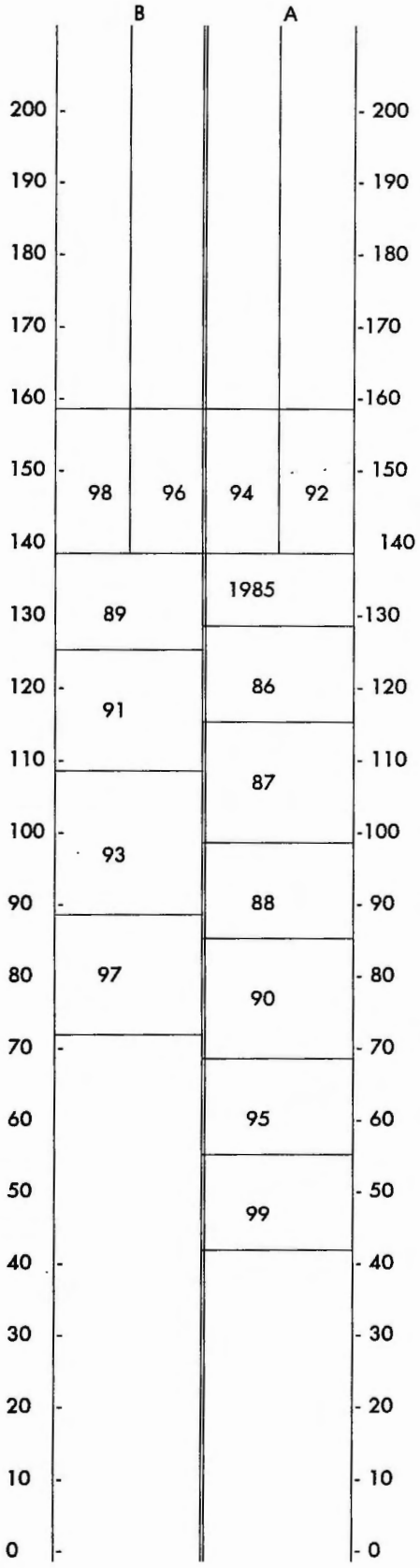
Year of Tapping	Tapping System	Production KG/HA
1985		589
1986		567
1987		895
1988		1157
1989		1443
1990	S/2 d/4 13 stimulations 2.5 %	1415
1991	S/2 d/4 -	
1992	"	

Date of visit : 21/6/91
Name of the plantations : TANJUNG - MARIA
Block : 17 (associated blocks 18 and 13 -AVROS)
area : 60 ha
clone : GT 1
date of planting : 1980
date of opening : 1985

Observations :

Treatment : 2-6

. position of the cut on the panel from year 92,
92 1/4 S /
93 1/2 S \
94 1/4 S / and so on..



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Treatments :

No. of treatment	Tapping system	Stimulation : concentration 5% a.i.			Number of tapping/ year
		Number/ year	Quantity of mixture	Quantity of a.i./t/y	
Control 1	1/2 S d/4	10	0.8 cc	400	80
2	*1/4 S d/4*	20	0.4 cc	400	80
3	1/2 S d/5	10	0.8 cc	400	65
4	1/2 S d/5	15	0.8 cc	600	65
5	1/2 S d/5	20	0.8 cc	800	65
6	*1/4 S d/5*	24	0.4 cc	480	65

* See the diagram of the tapping panel.

Color paint for identification of trees :

Treatment 1 Red
Treatment 2 Blue
Treatment 3 Black
Treatment 4 Yellow
Treatment 5 Green
Treatment 6 White

Dimensions :

° Elementary plot :

4 rows x 30 points = 120 points

° One replication :

6 treatments x 120 points = 720 points

° The experiment :

4 replications x 720 points = 2880 points.

Rough outline of the experiment :

Replication

A	6 white	1 red	4 yellow	2 blue	5 green	3 black
B	1 red	3 black	6 white	4 yellow	2 blue	5 green
C	5 green	6 white	2 blue	1 red	4 yellow	3 black
D	2 blue	5 green	1 red	4 yellow	3 black	6 white

Setting up :

The setting up must be the same as experiment in LIMA-PULUH.

It will be very usefull to check the uniformity of plots, making controle of production the first 3 months of experiment without any change of tapping system (october, november, december).

Observations and checks :

The trees in the trial will have to be followed up with measurements of growth, yield, state of health of the trees (dry cuts, other disease, etc.).

Growth : individual, measurement of girth at a height of 1.70 m, to be entered on the attached plans per replication (when established, then one a year).

Yield : . at elementary plot level, measure the weight of latex (each tapping),

. per treatment, mix the latex from 4 replications, measure the DRC in accordance with the SOCFINDO method,

. the DRC measurement must be taken on each day of tapping,

. measure the weight of cup lumps ; a coefficient of 50% should be allowed for converting damp weight into dry weight.

Remarks :

. The map of the experiment is the same as the first experiment LP-AE-01.

. The controles are the same as the LP-AE-01 experiment.

ANNEX 3

ANNEX III

Stimulation depending on the clones and the tapping year

The different work carried out on Ethrel application to stimulate *hevea* latex production has revealed different clone reactions. Thus, as knowledge stands at present, a distinction can be made between three categories of clones in respect of stimulation.

1. Stimulation intensity

- clones requiring slight stimulation
  PB 235, PB 260, PB 5/51, IRCA 111

- clones requiring moderate stimulation
  GT 1, RRIM 600, PR 107

- clones requiring strong stimulation
  AVROS 2037, PR 261, PB 217

Based on this typology, stimulation recommendations that can be made for a 1/2 S D/4-D/5-D/5 system are compiled in the attached table.

Number of tappings : 78 if tapped 12 months/12
72 if tapped 11 months/12
66 if tapped 10 months/12

2. Quantity of mixture applied for each stimulation

1/2 S = 0.6 g to 0.8 g depending on tree age
1/4 S = 0.4 g/stimulation

QUANTITE DE STIMULATION EN FONCTION DES CLONES ET DE L'AGE DES ARBRES

année de saignée	catégorie/clone réponse à la stimulation	quantité de mélange stimulation gr	Nombre de stimulation	concentration du mélange %	quantité de matière active mg/arbre
1ère année	faible	0.6	4	2.5	60
	moyenne	-	8	2.5	120
	forte	-	6	5	180
2ème et 3ème année	faible	0.7	5	2.5	88
	moyenne	-	10	2.5	175
	forte	-	8	5	280
4 - 5 - 6ème année	faible	0.8	6	2.5	120
	moyenne	-	12	2.5	240
	forte	-	9	5	360
7ème et suivantes	faible	0.8	8	2.5	160
	moyenne	-	10	5	400
	forte	-	12	5	480
1/2 S ↗ après 15 années de saignée	faible	0.8	6	2.5	120
	moyenne	-	10	2.5	175
	forte	-	9	5	360
1/4 S ↗ à partir de la 11ème année	faible	0.4	12	2.5	120
	moyenne	-	de 12 à 20 selon	2.5 ou 5 % selon	120 à 400
	forte	-	Cas et âge	selon cas et âge	

STIMULATION TIME

Month / N° of stimulation	J	F	M	A	M	J	J	A	S	O	N	D
4						x				x	x	x
8	x					x	x	x	x	x	x	x
10	x	x	x			x	x	x	x	x	x	x
12	x	x	x			x	x	x	x	xx	x	xx
13	x	x	x			x	x	x	x	xx	xx	xx
15	xx	x	x			x	x	x	xx	xx	xx	xx
18	xx	x	x			xx	xx	xx	xx	xx	xx	xx
20	xx	xx	xx			xx	xx	xx	xx	xx	xx	xx